NATIONAL CADET CORPS

HEAD QUARTERS DG NCC

National Cadet Corps

Edition 2017, HQ DG NCC, India

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Published By: The Director General, National Cadets Corps
Delhi-110030

Design, Layout: NCC OTA, Kamptee

Printed By: Shri Sai Enterprises
RZ-147, Street-3, Dabri Indl. Area,
New Delhi-110045
Ph. : 011-52381787, 9810274844

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, Having Solemnly Resolved To Constitute India Into A [1][SOVEREIGN SOCIALIST

SECULAR DEMOCRATIC REPUBLIC] And To Secure To All Its Citizens :

JUSTICE, Social, Economic And Political;

LIBERTY Of Thought, Expression, Belief, Faith And Worship;

EQUALITY Of Status And Of Opportunity; And To Promote Among Them All

FRATERNITY Assuring The Dignity Of The Individual And The[2] [Unity And Integrity Of The Nation];

IN OUR CONSTITUENT ASSEMBLY This Twenty-Sixth Day OfNovember, 1949, Do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

[1]Subs, By The Constitution (Forty-Second Amendment) Act.1976, Sec.2, For "Sovereign Democratic Republic" (W.E.F. 3.1.1977)

[2]Subs, By The Constitution (Forty-Second Amendment) Act. 1976, Sec. 2, For "Unity Of The Nation" (W.E.F. 3.1.1977)

THE CONSTITUTION OF INDIA

Chapter IV A

FUNDAMENTAL DUTIES

ARTICLE 51A

Fundamental Duties - It Shall Be The Duty Of Every Citizen Of India-

To Abide By The Constitution And Respect Its Ideals And Institutions,
The National Flag And The National Anthem;
To Cherish And Follow The Noble Ideals Which Inspired Our National Struggle For Freedom;
To Uphold And Protect The Sovereignty, Unity And Integrity Of India;
To Defend The Country And Render National Service When Called Upon To Do So;
To Promote Harmony And The Spirit Of Common Brotherhood Amongst All The People Of India Transcending Religious, Linguistic And Regional Or Sectional Diversities;
To Renounce Practices Derogatory To The Dignity Of Women;
To Value And Preserve The Rich Heritage Of Our Composite Culture;
To Protect And Improve The Natural Environment Including Forests, Lakes, Rivers, Wild Life And To Have Compassion For Living Creatures;
To Develop The Scientific Temper, Humanism And The Spirit Of Inquiry And Reform;
To Safeguard Public Property And To Abjure Violence;
To Strive Towards Excellence In All Spheres Of Individual And Collective Activity So That The Nation Constantly Rises To Higher Levels Of Endeavour And Achievement;
[1](K) Who Is A Parent Or Guardian To Provide Opportunities For Education To His/Her Child Or, As The Case May Be, Ward Between Age Of Six And Forteen Years.

[1]Ins. By The Constitution (Eighty - Sixth Amendment) Act, 2002 S.4 (W.E.F. 12.12.2002)

NATIONAL ANTHEM

Jana Gana Mana Adhinaayak Jaya Hey,

Bhaarat Bhaagya Vidhaataa

Panjaab Sindhu Gujrat Maraatha

Draavid Utkal Banga

Vindhya Himaachal

Yamuna Ganga,

Uchchhal Jaladhi Taranga

Tav Shubh Naamey Jaagey

Tav Shubh Aashish Mange

Gaayy Tav Jaya gaathaa

Jana Gana Mangal Daayak

Jaya Hey Bhaarat

Bhagya Vidhaataa

Jaya Hey, Jaya Hey,

Jaya Hey, Jaya Jaya Jaya, Jaya Hey.

Preface

1. National Cadet Corps (NCC) came into existence on 15 July 1948 under an Act of Parliament. Over the years, NCC has spread its activities and values across the length and breadth of the country; in schools and colleges in almost all the districts of India. It has attracted millions of young boys and girls to the very ethos espoused by its motto "unity and discipline" and molded them into disciplined and responsible citizens of the country. NCC has attained an enviable brand value for itself in the Young India's mind space.

2. National Cadet Corps (NCC) aims at character building and leadership in all walks of life and promotes the spirit of patriotism and National Integration among the youth of the country. Towards this end, it runs a multifaceted training; varied in content, style and processes with added emphasis on practical training, outdoor training and training as a community.

3. With the dawn of Third Millennia, there have been rapid strides in technology, information, social and economic fields bringing in a paradigm shift in learning field too; NCC being no exception. A need was felt to change with times. NCC has introduced its New Training Philosophy, catering to all the new changes and developments taking place in Indian Society. It has streamlined and completely overhauled its training objectives, syllabus, methodology etc thus making it in sync with times. Subjects like National Integration, Personality Development and Life skills, Social Awareness etc have alsobeen given prominent thrust.

4. The new syllabus has been in force for the last five years. The feedback, suggestions and various limitations have been brought out by different stake holders. This new edition being the outcome of these suggestions.

5. For the ease of both Trainers and Trainees alike, a summary and a list of various types of questions concerning the unit have been added at the end of each unit. The syllabus has been revised to make it cadet friendly, colourful with large number of photographs, charts, pictures etc and visually appealing. It is hoped that this will facilitate better assimilation and increased interest among the cadets.

6. The book has been the outcome of sincere devotion and relentless effort of the team Officers Training Academy, Kamptee duly steered by the Commandant. Our sincere gratitude and compliments to them. Any suggestions are welcome for its improvement in the future editions.

7. Contents of this hard work must form the basis of Institutional Training with explicit commitment.

Vinod Vashisht
Lieutenant General
Director General
National Cadet Corps

Acknowledgement

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UNIT 1: ARMED FORCES

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UNIT 1: ARMED FORCES

Knowledge	Understanding	Application Skill	Evaluation
Basic Organisation of Armed Forces	The cadet will understand the basic structure of the three services of Armed Forces.	The cadet will be aware of the three services and develop sense of pride in Armed Forces.	Work sheets and assignment
Organisation of Army	The cadet will understand the basic outline organisation of Indian Army.	The cadet will have an insight of various arms and services of Army and get motivated to join one of them.	Work sheets
Badges and Ranks	The cadet will understand the rank structure of the three services of Armed Forces.	The cadet will be able to recognise and compare the rank structure of the three services.	Work sheets and assignment
Task and Role of Fighting Arms	The cadet will understand the task and role of Fighting Arms.	The cadet will be able to understand the capabilities of fighting Arms.	Work sheets
Task and Role of Supporting Arms and Services	The cadet will understand the task and role of Supporting Arms and Services.	The cadet will be able to understand the employment of Supporting Arms and Services.	Work sheets
Modes of entry to Armed Forces	The cadet will understand the Modes of Entry into Armed Forces.	The cadet will be able to equip him/herself for entry into Armed Forces.	sheets and assignment
Honours and Awards	The cadet will understand the Honours and Awards.	The cadet will be able to understand different Awards, Honours and decorations in the Armed Forces.	Assignments

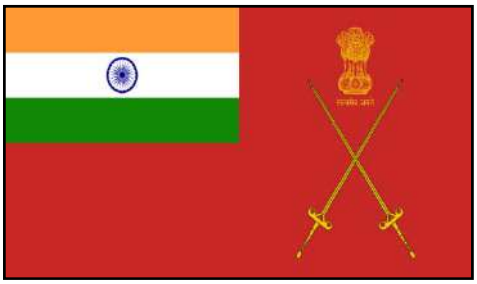
CHAPTER - I

BASIC ORGANISATION OF ARMED FORCES

Introduction

As a Cadet of NCC, it is very important to understand the basic organisation of our Armed Forces. An overview of the command and control structure shows how finely it has been tuned to meet India's security requirements, based on the major wars that it has fought and the present day relations between India and its neighbours.

Army



The Indian Army is the land-based branch and the largest component of the Indian Armed Forces. The President of India serves as the Supreme Commander of the Indian Army, and it is commanded by Chief of Army staff(COAS),who is a four star general.. The Chief of Army Staff is the head of the Indian Army and is responsible for all army activities. Officers who assist him are:-

(a) Vice Chief of Army Staff.

(b) Two Deputy Chiefs of Army Staff.

(c) Principle Staff Officers (PSOs).

(d) Heads of Arms and Services.

(e) Field Army (Commands).

Command Headquarters

Command Headquarters is commanded by an officer of the rank of Lieutenant General who is called Army Commander or GOC – in - C. The whole country is divided into Seven theatre Commands who have subordinate formations under them. These are:-

Command Insignia	Command Name	Headquarters
	Headquarters, Indian Army	New Delhi
	Central Command	Lucknow
	Eastern Command	Kolkata

	Northern Command	Udhampur
	Southern Command	Pune
	South Western Command	Jaipur
	Western Command	Chandimandir
	Army Training Command	Shimla

Navy

Our country is covered almost from three sides with water with a coastline of approximately over 6000 Kms. The sea around India has impact/effect on India's freedom, trade, commerce, and culture. The Indian Navy (Bharatiya Nau Sena) is the naval branch of the Indian Armed Forces. The President of India serves as Supreme Commander of the Indian Navy. The Chief of Naval Staff, usually a four-star officer in the rank of Admiral, commands the navy. The Indian Navy is the fifth largest in the world. The primary objective of the navy is to secure the nation's maritime borders.

Constituents of the Navy

As of 2017, the Indian Navy has a strength of 67,109 personnel and a large operational fleet consisting of one aircraft carrier, one amphibious transport dock, eight landing ship tanks, 11 destroyers, 14 frigates, one nuclear-powered attack submarine, one ballistic missile submarine, 13 conventionally-powered attack submarines, 23 corvettes, six mine countermeasure vessels, 29 patrol vessels, four fleet tankers and various other auxiliary vessels.

Organisation and Administration

Chief of Naval Staff commands Indian Navy. Integrated Headquarters of the Ministry of Defence (Navy) is located in New Delhi. The Navy is divided into three commands: -

Commands	Headquarters
Western Naval Command	Mumbai
Eastern Naval Command	Vishakhapatnam
Southern Naval Command	Kochi

Air Force

Indian Air Force is the youngest of the three Services.It is the air arm of the Indian armed forces. It is the world's fourth largest air force in terms of both personnel and aircraft Its primary responsibility is to secure Indian airspace and to conduct aerial warfare during a conflict It came into existence in the year 1932. Indian Air Force comprises of fighter aircrafts, transporter aircrafts, bombers and helicopters.The President of India serves as Supreme Commander of the IAF. The Chief of Air Staff, an air chief marshal, is a four-star officer and commands the Air Force

Air Headquarters

Indian Air Force is commanded by Chief of the Air Staff. The staff of Air Headquarters consists of three branches:-

(a) Air Staff branch.

(b) Administrative branch.

(c) Maintenance branch.

Commands

The Air Force is organized into seven commands which are controlled by Air HQ. Each Command is placed under the command of an Air Officer Commanding-in-Chief. The Commands are: -

Commands	Headquarters
Operational commands	
Central Air Command (CAC)	Allahabad, Uttar Pradesh
Eastern Air Command (EAC)	Thiruvananthapuram, Kerala
Southern Air Command (SAC)	Shillong, Meghalaya
South Western Air Command (SWAC)	Gandhinagar, Gujarat
Western Air Command (WAC)	New Delhi
Functional Commands	
Training Command (TC)	Bangalore, Karnataka
Maintenance Command (MC)	Nagpur, Maharashtra

Conclusion

The organisation of the Armed Forces is structured in a manner to facilitate coordination of the functioning of all the three services with the nucleus being the Service Headquarters and various Formations down the Chain of Command.

CHAPTER - II

ORGANISATION OF ARMY

Introduction

The primary mission of the Indian Army is to ensure national security and unity, defending the nation from external aggression and internal threats, and maintaining peace and security within its borders. It conducts humanitarian rescue operations during natural calamities and other disturbances, and also be requisitioned by the government to cope with internal threats. The present day Indian Army is one of the foremost fighting armies of the world. It is a thoroughly professional force that has vast combat experience. The organisation draws its customs, traditions, ethos and basic character from the erstwhile British Indian Army. At the time of independence in 1947, due to partition of India, the old Indian Army was also divided. Since then, the Army has been constantly re-organised and modernised to suit the peculiar varied geographical and geo-political situation of the nation.The Army since independence has taken part in the following major operations:-

(a) Kashmir Operations against Pakistan 1947-48.

(b) Sino-Indian Operations in NEFA (Arunachal) and Ladakh 1962.

(c) Indo-Pak war 1965.

(d) Indo-Pak war 1971.

(e) Sri Lanka 1987-1990 (Operation Pawan)

(f) Kargil conflict 1999 (Operation Vijay)

Command And Control

The Army HQ functions under the ministry of Defence and is located at New Delhi. Command HQs have field formations and static formations under them.

Field Formations

These are the field forces for the battle. They are grouped into three categories. Which are as follows:-

(a) **Corps**. Commanded by an officer of the rank of Lieutenant General. It has 3-4 Divisions under its command. The Corps are of two types depending on their role:-

(i) “Holding” (Defensive) Corps.

(ii) “Strike” (Offensive) Corps.

(b) **Divisions**. Commanded by an officer of the rank of Major General. It has 3-4 Brigades under its command.

(c) **Brigades**. Commanded by an officer of the rank of Brigadier. It has 3-4 Battalions under its command. Each Battalion has six coys commanded by a Company Commander.

Static Formations

Area Headquarters and Sub Area Headquarters are commanded by an officer of the rank of Lieutenant General, and Major General respectively. These formations are extended all over the country

and look after the infrastructural assets, lines of communication logistics, administration and all matters of civil-military liaison etc.

Fighting Arms

Armour Corps

The **Armoured Corps** is one of the combat arms of the Indian Army. Formed in 1947, it has battle tanks which provide the mobility ad fire power. It currently consists of 63 armoured regiments; including the president's bodyguardsthe basic role of amour is to destroy the enemy by relentless, mobile offensive action, both in offensive and defensive operations. Armour is best suited for present day battle field environment because of its mobility, fire power protection and shock action. An Armoured Regiment has 45 tanks. In India we have Tank T-72, Tank T-90 and MBT Arjun tanks.

Infantry

Infantry is the main combat arm, best arm suited for close battle. Its role is to close in with the enemy and destroy him or capture his territory. In Defence, they hold the ground against all types of attack. They also take part in counter insurgency and counter terrorist operations. Infantry also provides assistance in aid to civil authorities when called for.

Mechanised Infantry

It is infantry with more mobility and fire power. Mechanized Infantry moves in armoured personnel carrier (APC) which has enough protection against small arms fire. They operate along with Armour in battle field. Equipments used are BMP- I and II.

Supporting Arms

The Supporting Arms which help the Fighting Arms consist of the following Arms. The Supporting Arms will be covered in Detail in AF-3:-

(a) Artillery(Long range weapon Guns, Howitzers and Mortars)

(b) Engineers (Bridges, construction and demolition)

(c) Army Air Defence (Anti-aircraft weapons)

(d) Army Aviation Corps (Helicopters)

(e) Signals (Communication Wing)

Supporting Services

The supporting services provide administrative cover to the fighting and supporting arms to carry out their task. The services and their functions will be covered in Detail in AF-7.

(a) Army Service Corps (Rations, Fuel and Transport)

(b) Army Medical Corps (Hospitals, Field Ambulances, Medical Aid Posts)

(c) Army Ordnance Corps (Ammunition & Clothing)

(d) Corps of Electrical and Mechanical Engineers (Repair and Recovery)

(e) Remount and Veterinary Corps (Animal Transport, Mules and Army Dog units)

(f) Army Education Corps (Human Resource Development

(g) The Intelligence Corps (Field Intelligence)

(h) The Corps of Military Police (Discipline & Protocol)

(j) Judge Advocate General Branch (Army Lawyers)

(k) Army Physical Training Corps (PT Instructors, Coaches Sports & Games)

(l) Defence Security Corps (Security of important area)

Conclusion

At the time of independence in 1947, due to partition of India, the old Indian Army was also divided. Since then the Army has been constantly re-organised and modernized to suit the modern day warfare. In the army every operational task is performed with the help of all components of the Army i.e. combat arms, combat support arms and services.

CHAPTER - III
BADGES OF RANKS

Introduction

The Indian Armed Forces consists of three professional uniformed services: the Indian Army, Indian Navy, and Indian Air Force. All the three services have distinct Badges of ranks which help in identifying soldiers and their commanders. The ranks of Badges are given as per professional competence and length of service in Armed Forces.

Common Military Ranks		
Navy	**Army**	**Air Force**
Commissioned		
Admiral of the fleet	Marshal or Field marshal	Marshal of the air force
Admiral	General	Air chief marshal
Vice admiral	Lieutenant general	Air marshal
Rear admiral	Major general	Air vice-marshal
Commodore	Brigadier	Air commodore
Captain	Colonel	Group captain
Commander	Lieutenant colonel	Wing commander
Lieutenant commander	Major	Squadron leader
Lieutenant	Captain	Flight lieutenant
Sub-lieutenant	Lieutenant	Flying officer

Badges Of Rank-Army

Commissioned Officers Army

Commissioned Officers of Indian Army are those who command their troops from Platoon or equivalent up to Corps and higher and hold Presidents commission. Field Marshal is an honorary rank and is given to a General for his valuable services. K.M Cariappa was awarded the rank of Field Marshal in the year 1986 for his valuable services to Indian Army.S.H.F.J Manekshaw were Army Chief in 1971 war against Pakistan which liberated Bangladesh. He was awarded the Rank of Field Marshal for his exemplary leadership during the war. A Field Marshal is a Five Star Rank. The badges of rank worn by commissioned officers are as given under:

Junior Commissioned Officer (JCO) Army

The second set of officers in the Army is Junior Commissioned Officers. The soldiers who become JCOs join the Army as sepoys and come up through the NCO ranks. The ranks of Subedar Major, Subedar and Naib Subedar are used in the Infantry and other Arms and Services. While the ranks of Risaldar Major, Risaldar and Naib Risaldar are used in the Armed Corps. The badges of rank worn by the JCOs are :-

Non Commissioned Officer (NCO) Army

The third set of officers is the Non Commissioned Officers (NCOs). These ranks are given to jawans according to their merit and seniority. The badges of ranks for NCOs are :-

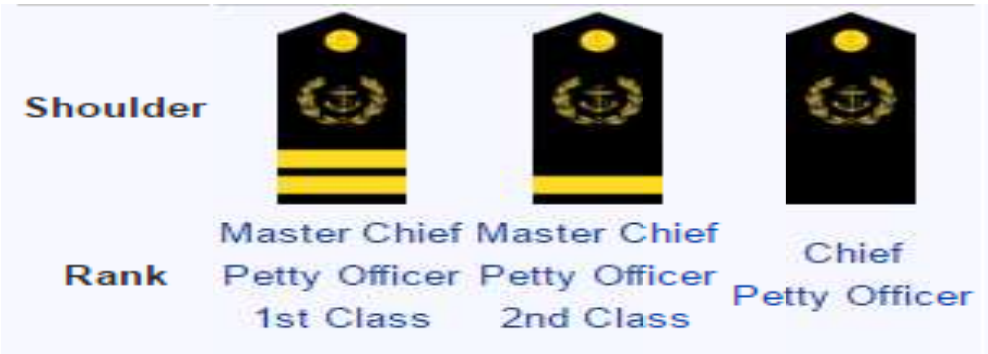
PART II - BADGES OF RANK- NAVY

Commissioned Officers Navy

Admiral of the Fleet is an honorary rank given to an Admiral for his invaluable service and will continue to serve the rest of his term with the honorary rank. This rank has not been used in the Indian Navy. The badges of rank worn by Naval Officers are:-

Junior Commissioned Officers (JCOs) Navy

The badges of rank worn by these Officers are:-



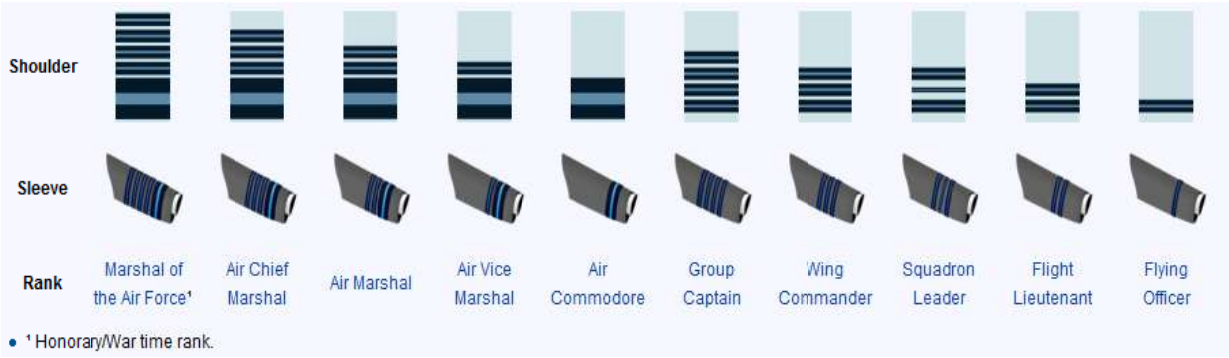
Non Commissioned Officers (NCOs) Army

The badges of rank worn by the NCOs are:-

Badges Of Rank- Air Force

Commissioned Officers Airforce

Marshall of the Air Force is an honorary rank given to an Air Chief Marshall for his invaluable service. In recognition of his services the Government of India gave the rank of Marshall of the Air Force to Arjan Singh in January 2002 making him the first and the only “Five Star” rank officer with the Indian Air Force. The badges of rank worn by officers are:-



Junior Commissioned Officers (JCOs) Airforce

The badges of rank worn by these Officers are:-

Non Commissioned Officers (NCOs) Airforce

The badges of rank worn by these NCOs are:-

Conclusion

The officers, Junior Commissioned Officers and Non Commissioned Officers of all the three services have different badges of Rank. The badges of ranks facilitate easy recognition of rank of Officers, JCOs and NCOs.

CHAPTER – IV

TASK AND ROLE OF FIGHTING ARMY

Introduction

A well trained and motivated Army can defeat enemy by relentless and offensive action of its Armour coupled with Mechanised Infantry, however the overrun enemy can be said to be actually defeated only when his territory is physically captured and is completely destroyed

Infantry

Defeat of the enemy implies the destruction of his fighting forces and his war waging potential. It is infantry that captures and occupies the ground.

Role of Infantry

Infantry is essential arm of close combat. Its role in attack is to close in with the enemy and destroy or captures him; in defence it is to hold ground against all forms of attacks by the enemy.

Characteristics of Infantry

Self-Reliance. This is the basic and most important characteristic of the infantry. The Infantry may have to close in with the enemy many times, with or without support of other Arms and Services.

Ability to Hold Ground. Infantry is the arm best suited for this task.

Adaptability.Infantry is highly adaptable and can operate over any type of ground, by day or by night and under almost any climatic conditions.

Mobility.Unlike other arms, it has a degree of mobility over almost any kind of terrain with or without transport.

Vulnerability. Infantry is vulnerable against:-

(a) **Ground Action**

(b) **Air Attack**

(c) **Anti-Personnel Mines**

Employment and Tactics

Employment. Infantry can be employed in any operation of war. However, the basic role remains same i.e, close in with the enemy to destroy or capture them and to hold the ground.

Tactics. Fire and movement is the basis of all infantry tactics. It means while one part moves the other gives fire support.

Infantry Weapons. The basic infantry weapons are the rifle and bayonet, the light machine gun and grenades. In addition certain personnel are armed with carbine and pistol.

Training. The training of Infantry include skill at Arms, endurance, initiative, adaptability, and skillful use of ground.

Armour

Role of Armour

To destroy the enemy by relentless mobile and offensive action in both offensive as well as defensive operations.

Principles of Employment

Offensive Action. The tasks given to Armour should be offensive in nature and concept. Armour must be employed as aggressively as possible.

Concentration. Armour is concentrated to produce decisive results. For maximum shock effect it should be used in mass in depth.

Surprise.Armour achieves surprise mainly by weight, violence, and direction of its attack combined with the speed with which the operation is executed. This is achieved by skilful use of ground and overcoming of obstacles.

Flexibility.Sound organization, good physical mobility and excellent means of command and control allow a high degree of flexibility.

Cooperation.The full potential of armour can only be developed when it is organised into combined battle groups which should include tanks, mechanised infantry, self-propelled artillery, assault engineers, attack helicopters and is provided with close air support.

Speed.In mobile warfare speed is of great importance. It involves the following: -

(a) Speed in decision.
(b) Speed in issue of orders.
(c) Speed in execution.

The Mechanised Infantry

The concept of mechanised infantry is based on the need to provide protection with added mobility, radio communications and firepower to enable the infantry to operate effectively in mobile operations with armour.

Role of the Mechanized Infantry

Primary Role. The primary role of the mechanised infantry is to close with the enemy in coordination with armour and destroy or capture the enemy.

Secondary Role.

(a) Destroy the enemy over run by armour.
(b) Hold ground temporarily.
(c) Reconnaissance.

(e) For counter infiltration and against parachute and heliborne landings.

Characteristics of Mechanized Infantry

Mobility. It has the capability to move cross country and because of the amphibious capability (capable of operating on both land and water) help infantry to move across the water obstacle.

Protection. The light armour of the armoured personnel carrier provides protection against small arms fire and shell splinters.

Fire Power. Mechanized infantry is able to bring together considerable firepower due to the machine guns mounted on the armoured personnel carriers. Though mechanized infantry will normally operate with armour, they have been provided with their own organic anti-tank weapons to make them self-reliant.

Communication. Radio is the primary means of communication in a mechanized infantry unit. Radio communication facilitates receiving and passing orders quickly while on the move and for close and intimate cooperation with Armour.

Flexibility. Mechanized Infantry units and subunits can quickly form composite groups with Armour for a variety of missions and can be rapidly switched over from one mission to another.

Shock Action. Mechanised infantry can produce shock effect much greater than an equivalent or even a larger quantity of infantry attacking on foot.

Conclusion

Army is the organisation which is mainly divided into two categories the Arms & the Services. The Artillery, Engineers, Signals, Air Defence Corps, and Aviation Corps are called Supporting Arms, as they support the Fighting Arms in the battle field.

CHAPTER V

TASK AND ROLE OF SUPPORTING ARMS AND SERVICES

Introduction

Army is mainly divided into two categories the Arms & the Services. Arms can be further classified into Armoured Corps, Infantry, Artillery, Engineers, Signals, Air Defence Corps and Aviation Corps. The Armoured Corps and Infantry are called Fighting Arms. The Artillery, Engineers, Signals, Air Defence Corps, and Aviation Corps are called Supporting Arms, as they support the Fighting Arms in the battle field. Army Service Corps (ASC), Army Ordnance Corps (AOC), Corps of Electrical and Mechanical Engineers (EME) and Army Medical Corps (AMC) are called Services as they provide logistical support to Fighting Arms.

Supporting Arms

Supporting Arms are those arms who give support to Fighting Arms from behind to enable them to accomplish the assigned task effectively. Armour, Infantry and Mechanised Infantry are known as "Fighting Arms". The supporting arms which help the Fighting Arms to accomplish the task are :-

Artillery

The role of Artillery is to provide such fire power in the battle area that enemy neither interferes with our operations, nor develops his own effectively. It comprises of light, medium and field guns, howitzers, mortars, multi barrel rocket launchers and missiles.

Tasks. The tasks of Arty are as follows:-

(a) To provide heavy volume of fire at long ranges

(b) To provide fire power to advancing Infantry in offensive operations and defensive support to keep enemy head down with shocking firepower.

(c) To provide fire power to fighting arms.

Corps of Army Air Defence

Army Air Defence is equipped with air defence guns and Short and Medium range surface to air missile systems. Along with Air force it provides air defence to mobile forces, Vulnerable Areas and VulnerablePoints.

Tasks. The tasks of Air Defence are :-

(a) To safeguard against hostile aircrafts, helicopters and drones attacking high values targets including Fighting Arms.

(b) To ensure early detection and destruction of enemy aircrafts.

Army Aviation Corps

The role of Army Aviation corps is to carry out recce and observation and also to provide commanders and staff, rapid means of communication for liaison visits and reconnaissance. It is ideally suited for evacuation of battle casualties.

Corps of Engineers

It is one of the oldest supporting arms of the Indian army. The role of Engineers in War is to provide support for offensive and defensive operations in mine warfare, bridging, demolition, constructions of field fortifications and operational roads/tracks.

Tasks.The task of Engineers are as follows :-

(a) To provide mobility to own forces by constructing bridges, tracks and helipads; on the other hand the Corps denies the same to the enemy by creating obstacles such as laying mine-fields and demolition of bridges.
(b) To lay mine fields during War and also removing the mines and maintenance of records thereof.
(c) To create water sources during operations.
(d) To help in transportation of explosives and undertake bomb disposal activities during peace and war.

Corps of Signals

They are the communicators of Indian Army and provide Radio, Radio Relay, data and line communication and establish Signal Centres during war and peace. Italso monitors enemy's communication systems.

Intelligence Corps

The main task of Intelligence Corps is to gather intelligence of the enemy and prevent the leakage of own information to the enemy.

Supporting Services

The following Arms are called Services as they provide logistical support to fighting Arms:-

Corps of Electrical and Mechanical Engineering

The major role of EME is repair, recovery and maintenance of all vehicles, arms, electrical, electronic and mechanical equipment.

Army Service Corps

ASC is responsible for: -

(a) The supply and provision of ration to the Army during peace and war.

(b) To provide fuel oil and lubricants to the entire Army.

(c) To provide transport for conveyance of troops during movement.

(d) Transportation of heavy equipment and machineries including ammunition during war.

Army Medical Corps

It provides medical facilities during war as well as in peace stations to troops and their families.

Army Dental Corps

This Corps provides dental hygiene and treatment to the soldiers.

Military Nursing Service

They provide nursing and care to the sick and wounded army personnel.

Army Ordinance Corps

It is responsible to provide equipment support to the Army during war & peace which are not the responsibility of ASC, AMC and that of ENGINEERS.

Remount and Veterinary Corps

It deals with caring and training of animals.

Military Farms

They provide the Indian Army with dairy products and fodder for the animals maintained by the Army.

Army Education Corps

AEC is responsible for imparting Military & Civil education to troops which helps them in passing promotion exams required in their career and profession. They impart higher education to JCOs and NCOs.

Corps of Military Police

Its role is to provide security to Army personnel and their families and maintain law and order in the Army area. It also helps in movement of men, material and vehicles during peace or war.

Judge Advocate General Branch

Deals with legal matters relating to all branches of the Armed Forces.

Military Engineering Services

They are responsible for the design, construction and maintenance of all works, buildings, airfields, dock installations and also with accessory services for the Army.

Border Roads Organisation

Their main purpose is to create national highways, airfields, buildings and bridges.

Army Pioneer Corps

Civilian labour is either not available or it is not required for security reasons. The Pioneer Corps provides disciplined and well trained manpower for load carriage. They are mostly committed in operational areas during war.

Conclusion

Army is the organisation which is mainly divided into two categories the Arms & the Services. The Artillery, Engineers, Signals, Air Defence Corps, and Aviation Corps are called Supporting Arms, as they support the Fighting Arms in the battle field.

CHAPTER - VI

MODES OF ENTRY TO ARMY

Introduction

After gaining education, all of us look for a huge pay package to fulfil our dreams. But beyond this, Army is the only profession which gives you a life full of opportunities to learn. It provides you attributes that go into making an excellent career, which are:-

(a) Professional Advancement
(b) Job Satisfaction
(c) Job Security
(d) Economic Stability
(e) Social Status
(f) Quality of Life
(g) Variety and Adventure

The Indian Army is the land based branch and the largest component of the Indian Armed Forces. Its primary mission is to ensure the national security and defence of the Republic of India from external attack and threats, and maintaining peace and security within its borders. It also provides aid to civil authorities in disaster management and maintaining essential services and conduct rescue operations during Natural calamities (earthquake, flood, drought etc) and other disturbances such as communal riots.

Types Of Commission

There are a number of ways in which one could get commission in the Army. You can join right after school or after graduation. The Army offers both Permanent and Short Service Commission. Permanent Commission (PC) is granted through the Indian Military Academy (IMA) Dehradun and Short Service Commission (SSC) is granted through Officers Training Academies (OTA) Chennai and Gaya.

(a) **Permanent Commission**

(i) NDA - after 10+2(Through UPSC).
(ii) Direct Entry (Through UPSC).
(iii) Engineering Graduates – TGC.
(iv) University Entry Scheme.
(v) Technical Entry Scheme 10 +2.

(b) **Short Service Commission**

(i) Non-Tech (Both Men & Women)
(ii) Tech (Both Men & Women)
(iii) NCC Special Entry (Both Men & Women)
(iv) Law Graduates(Both Men & Women)

Note.*Details of eligibility criteria, duration and venue of training and other information is freely available through newspapers or may be obtained from www.joinindianarmy.nic.in.*

Permanent Commission

A permanent commission means a career in the Army till you retire. For a permanent commission you have to join the National Defence academy Khadakwasla or the Indian Military Academy Dehradun.

NDA, PUNE

The National Defence Academy, Pune

ɔu can appear in NDA entrance exam right after class XII. After completion of three years in NDA, you will be awarded a degree and eligible to join IMA. For more details about NDA Khadakwasla visit website www.nda.nic.in

IMA, DEHRADUN

Indian Military Academy, Dehradun

Indian Milittary Academy is another cradle of leadership. The IMA trains you to lead from the front. You are trained in all aspect of combat and tactics using computers and other modern tools and technologies. The IMA has excellent facilities for all round development. You can go for adventure sports like river rafting, para jumping, rock climbing, tracking and mountaineering. From the IMA, you are commissioned as a "Lieutenant" and in the Indian Army. There are four main entries to get into IMA.

(a) **Combined Defence Service Examination (CDSE)**. In final year of Graduation, you need to pass the Combined Defence Service Exams being conducted by UPSC, clear the SSB interview, be medically fit and join IMA as a Direct Entry if you are in merit list. For details of exam dates/notification visit UPSC website upsc.nic.in.

(b) **10+2 Tech Entry**. You can apply after your 12th Exams. Minimum aggregate of 70% is mandatory in Physics, Chemistry and Mathematics. Eligible candidates are detailed for SSB interview based on the cut off percentage as decided by Recruiting Directorate. Total training is of five years. (one year at OTA Gaya and four years at Cadets Training Wings) .

OTA, GAYA

(c) **University Entry Scheme (Pre Final Year Students Only).** This entry is for those candidates who wish to apply for army in Pre-Final year of engineering.

(d) **Technical Graduate Course**. Those who are studying in final year/ have completed BE/B Tech in notified streams can also join IMA through Technical Graduate Course. The duration of training is 1 year through Technical Gradate Course.

Short Service Commission

You also have the option of joining the Army and serve as a Commissioned Officer for 10 years and extendable up to 14 years. At the end of this period you have two options. Either elect for a permanent Commission or opt out. Those not selected for Permanent Commission have the option of a 4 year extension. Those who want to opt out of Army, can resign at any time from the Army and have the opportunities to side step to an alternate career.

Officers Training Academy, Chennai

OTA, CHENNAI

Once selected for Short Service Commission, you go to the officers Training Academy at Chennai. The selection process is written exam followed by the SSB interview and Medical Examination Board. For Technical (Engineering) graduates and law graduates it is direct SSB interview and Medical Examination Board. If you have obtained NCC “C” certificate with minimum “B” grade, you can apply through your NCC Unit/Gp HQ/Dte for direct SSB interview. SSB qualified candidates undergo a medical examination. The duration of training is 49 weeks.(www.joinindianarmy.nic.in)

LADY COMMISSIONED OFFICERS, OTA, CHENNAI

Short Service Commission for Women (Officers)

An important landmark in the history of Army was the induction of women into the officer cadre in 1992, and the difficult task of training them was undertaken by Officers Training Academy, Chennai. So far, more than 1200 Lady Cadets have already been commissioned into the various Arms and Services of the Indian Army.

Revised Terms and Conditions of Service for SSCOs (Women) both Technical and Non-Technical

Prominent features of the revised policy are:-

(a) **Extension of Tenure.** Tenure of Short Service Commission (SSC) for Women in the Regular Army will be for 14 years i.e. for an initial period of 10 years, extendable by four more years. Duration of training is 49 weeks.

(b) **Substantive Promotion.** On completion of 2 years reckonable commissioned service one is promoted to the rank of Captain, after 6 years reckonable commissioned service to the rank of Major and after completion of 13 years reckonable commissioned service to the rank of Lieutenant Colonel.

Entry Schemes Officers (Men And Women)

Eligibility Criteria and Conditions are given below:-

10+2 Technical Entry Scheme (10+2 TES)

Tentative Vacancies per course	85
Notification.	Employment News and leading Daily News Papers. Notified by ADG Rtg, AG's Branch, IHQ of MOD (Army) in Apr & Sep.
Eligibility Criteria	
Age between	16 &1/2 to 19 & 1/2 years as on first day of the month in which course is due to commence
Qualification	12th Class of 10+2 System of Education /Equivalent with a minimum aggregate of 70% in Physics, Chemistry & Maths (PCM)

Marital Status	Unmarried
Application to be addressed to	ADG Recruiting, TES Section, AG Branch IHQ of MOD (Army) West Block III RK Puram New Delhi-110066
Training Academy	OTA Gaya
Duration of Training	01 Year Pre-Commission Training at OTA Gaya & 03 Years at CME Pune/MCTE Mhow /MCEME Secunderabad 01 Year Post Commission Training at CME Pune/ MCTE Mhow/MCEME, Secunderabad

National Defence Academy (NDA)

Tentative Vacancies per course Notification.	300 (Army–195, Air Force–66 & Navy-39) Twice a year. Employment News and leading Daily News Papers in Jun and Dec as notified by UPSC. Or as notified from time to time.
Eligibility Criteria	
Age between	16 & 1/2 to 19 & 1/2 years as on first day of the month in which course is due to commence
Qualification	12th Class of 10+2 System of Education/ Equivalent for Army and with Physics and Maths for AF/Navy
Marital Status	Unmarried
Application to be Received by	As per UPSC notification
Likely SSB date	Sep to Oct and Jan to Apr
Date Commencement of training	Jan and Jul
Training Academy	NDA, Khadakwasla, Pune
Duration of Training	3 Years at NDA and 1 Year at IMA (For Army cadets)
	3 Years at NDA and 1 Year at Naval Academy, Ezhimala (For Naval cadets)
	3 Years at NDA and 1 & ½ Years at AFA Hyderabad (For AF cadets)

NCC (SPL) Entry (Men)

Tentative Vacancies per course	50 (Twice a year)
Notification.	In Employment News and leading Daily News Papers Notified by ADG Recruiting / AG Branch in Jun & Dec
Eligibility Criteria	
Age between	19 and 25 Years as 01 Jan of the year in which course is due to commence for Oct Course. 01 Jul of the year in which course is due to commence for Apr Course.
Qualification	Final Year appearing/Graduate with 50% Aggregate marks, 2 year service in NCC Senior Div(Army) with minimum B Grade in C Certificate Exam.
Marital Status	Unmarried / Married
Application to be Received by	Apply online through joinindianarmy.nic.in Hard copy to be submitted to respective Directorates by Oct/Nov and Apr/May
Likely SSB Date	Dec/Jan and Jul/ Jun
Date Commencement of Training	Apr and Oct
Training Academy	OTA, Chennai
Duration of Training	49 Weeks

Indian Military Academy: Direct Entry (Non Technical Men)

Vacancies per course	250 (Twice a year)
Notification.	In Employment News and leading Daily News Papers. Notified by UPSC under the aegis of CDSE in May/ Jun and Nov/Dec
Eligibility Criteria	
Age between	19 and 24 years as on first day of month in which course is due to commence
Qualification	Graduation from recognised University
Marital Status	Unmarried
Likely SSB Date	Jul/ Aug and Mar/Apr
Date of Commencement of Training	Jan and Jul
Training Academy	IMA Dehradun
Duration of Training	18 Months

Officer Training Academy Chennai (Non Technical) (Men)

Vacancies per course	175 (Twice a year)
Notification.	In Employment News and leading Daily News Papers. Notified by UPSC under the aegis of CDSE in May/ Jun and Nov/Dec
Eligibility Criteria	
Age	19 and 24 years as on first day of month in which course is due to commence
Qualification	Graduation from recognised University
Marital Status	Unmarried /Married
Likely SSB Date	Nov/Dec and May/Jun
Date of Commencement of Training	Apr and Oct
Training Academy	OTA, Chennai
Duration of Training	49 Weeks

Technical Graduate Course (Engineers)

Vacancies per course	As Notified (Twice a Year)
Notification.	In Employment News and leading Daily News Papers. Notified by ADG Rtg / AG Branch in Apr and Oct
Eligibility Criteria	
Age	20 to 27 years
Born Between	2nd Jan to 1st Jan for Jan Course. 2nd Jul to 1st Jul for Jul Course.
Qualification	BE/ B Tech in notified streams of Engineers
Marital Status	Unmarried /Married
Application to be received by	Apr/ May and Oct/ Nov
Likely SSB Date	Mar/Apr and Sep/Oct
Date of Commencement of Training	Jan and Jul

Training Academy	IMA
Duration of Training	One Year

University Entry Scheme

Vacancies per course	60
Notification.	In Employment News and leading Daily News Papers. Notified by ADG Recruiting / AG Branch in May. Application to be forwarded to respective Command HQ as per the areas indicated in the notification
Eligibility Criteria	
Age	19 to 25 years for Final Year, 18 to 24 year for Pre Final Year
Born Between	2nd Jul to 1st Jul for Jul Course.
Qualification	Final and Pre Final year student of Engineering Degree Course
Marital Status	Unmarried
Application to be Received by	31 Jul or as specified in the notification.
Likely SSB Date	Jan to Mar for final year Aug to Oct for pre final year
Date of Commencement of Training	Jul at IMA Dehradun

Short Service Commission (Technical) (Men)

Vacancies per course	As Notified (Twice a Year)
Notification.	In Employment News and leading Daily News Papers. Notified by ADG Rtg / AG Branch in Dec/Jan and Jun/Jul
Eligibility Criteria	
Age Between	20 to 27 years as on first day of the month in which course is due to commence
Qualification	Engineering Degree in notified discipline
Marital Status	Unmarried / Married
Application to be received by	To Apply online & application to be forwarded as given in advertisement

Likely SSB Date	Nov to Jan for Apr Course and May to July for Oct Course
Date of Commencement of Training	Oct and Apr
Training Academy	OTA Chennai
During of Training	49 Weeks

Judge Advocate General Branch (Men)

Vacancies Per Course	As Notified
Notification.	Employment News and leading Daily News Papers
Eligibility Criteria	
Age between	21 and 27 years as on 01 Jul of the year in which course is due to commence for Oct course and 01 Jan of the year in which course is due to commence for Apr course
Qualification	Graduate with LLB / LLM with 55% marks. Registered with Bar Council of India / State
Marital Status	Unmarried / Married
Application to be received by	Oct / Nov and Apr / May
Likely SSB Date	Dec / Jan and Jul / Aug
Date Commencement of Training	Apr and Oct
Training Academy	OTA Chennai
Duration of Training	49 Weeks

Technical Graduate Course Education (AEC)

Vacancies per course	As Notified (Twice a Year)
Notification.	In Employment News and leading Daily News Papers Notified by ADG Rtg / AG Branch in May/Jun and Nov/Dec
Eligibility Criteria	
Age	23 to 28years
Born Between	2nd Jan to 1st Jan for Jan Course. 2nd Jul to 1st Jul for Jul Course.
Qualification	MS/MSc in 1st or 2nd division in notified subject from recognized university
Marital Status	Unmarried

Application to be Received by	Jun/Jul and Dec/Jan
Likely SSB Date	Sept/Oct and Apr/May
Training Academy	IMA
During of Training	One Year

NCC (SPL) Entry (Women)

Vacancies Per Course	As notified
Notification.	In Employment News and leading Daily news Papers. Notified by ADG Rtg / AG Branch in Jun / Dec
Eligibility Criteria	
Age between	19 and 25 years as on 01 Jan of the year in which course is due to commence for Apr course and 01 Jul of the year in which course is due to commence for Oct course
Qualification	Final Year appearing/Graduate in any discipline with 50% aggregate marks, 2 years' service in NCC Senior Wing,Army with minimum 'B' Grade in 'C' Certificate Exam.
Marital Status	Unmarried
Application to be received by	Apply online through joinindianarmy.nic.in Hard copy to be submitted to respective Directorates by Oct/Nov and Apr/May
Likely SSB Date	Nov to Jan for Apr Course and May to July for Oct Course
Date of Commencement of Training	Apr and Oct
Training Academy	OTA, Chennai

Short Service Commission (Non-Technical) (Women)

Vacancies Per Course	As Notified (Twice a year)
Notification.	In Employment News and leading Daily news Paper. Notified by ADG Rtg / AG Branch in Dec/Jan and Jun / Jul
Eligibility Criteria	
Age between	19 and 25 years as on 01 Jan of the year in which course is due to commence for Apr course and 01 Jul of the year in which course is due to commence for Oct course
Qualification	Graduation / Post Graduation from Recognized University.

Marital Status	Unmarried
Application to be Received by	Applications to be forwarded to UPSC as per notification published in Apr/ Sep every year
Likely SSB Date	May/Jun and Nov/Dec
Date Commencement of Training	Apr and Oct
Training Academy	OTA Chennai
Duration of Training	49 Weeks

Short Service Commission (Technical) (Women)

Vacancies Per Course	As Notified (Twice a year)
Notification.	In Employment News and leading Daily news Paper. Notified by ADG Rtg / AG Branch in Dec/Jan and Jun / Jul
Eligibility Criteria	
Age between	20 and 27 years as on first day of the month in which course is due to commence
Qualification	Engineering Degree in notified discipline
Marital Status	Unmarried
Application to be received by	Feb / Mar and Jul / Aug
Likely SSB Date	Nov to Jan for Apr Course and May to July for Oct Course
Date of Commencement of Training	Oct and Apr
Training Academy	OTA Chennai
Duration of Training	49 Weeks

Judge Advocate General (Women)

Vacancies Per Course	As Notified
Notification.	In Employment News and leading Daily news Papers. Notified by ADG Rtg / AG Branch
Eligibility Criteria	
Age between	21 and 27 years as on 01 Jan of the year in which course is due to commence for Apr course and 01 Jul of the year in which course is

	due to commence for Oct course
Qualification	Graduate with LLB / LLM with 55% marks. Registered with Bar Council of India / State
Marital Status	Unmarried
Application to be received by	Oct / Nov and Apr / May
Likely SSB Date	Dec / Jan and Jul / Aug
Date of Commencement of Training	Apr and Oct
Training Academy	OTA Chennai
Duration of Training	49 Weeks

JCOs & Other Ranks

Minimum educational qualification, and age criteria and other eligibility criteria for recruitment of JCOs and Other Ranks are given in the table below:-

S No	Category	Education	Age
(a)	Soldier (General Duty) (All Arms)	SSLC/Metric with 45% marks in aggregate and 33% in each subject. No percentage considered in case candidate has passed higher qualification i.e. 10+2 and above	17 ½ - 21 years
(b)	Solder (Technical Arms Artillery, Army Air Defence)	10+2/ Intermediate Exam pass in Science with Physics, Chemistry, Maths and English with 50% marks in aggregate and 40% in each subject	17 ½ - 23 Years
(c)	Soldiers Clerk/Store Keeper Technical (All Arms)	10+2/Intermediate Exam pass any stream (Arts, Commerce, Science) with 50% marks in aggregate and minimum 40 % in each subject. Should have studied and passed English and Maths/Accts/Book Keeping in CI X or CI XII with 40% marks in each subject. In case of graduate with English as subject in B.sc. the stipulation of 40% in CI X or CI XII is waived off. In case of graduate without English and Maths/Accts/Book Keeping he should have scored more than 40% in English and Maths/Accts/Book Keeping at least once in CI X or CI XII.	17 ½ - 23 Years

(d)	Soldier Nursing Assistant (Army Medical Corps)	10+2/Intermediate exam pass in Science with Physics, Chemistry, Biology and English with Min 50% marks in aggregate and min 40% in each subject. In case the candidate has a BSc Degree with (Botany/Zoology/Bio-Science) and English, the stipulation of 50% percentage in CI-XII is waived off. However, the candidate should have studied all the four specified subjects in CI XII also.	17 ½ - 23 Years
(e)	Soldier Tradesmen (All Arms)	10th (except for Mess Keeper and House Keeper who may be 8th pass)	17 ½ - 23 Years
(f)	Surveyor Auto Carto (Engineers)	BA/BSc with Maths. Must have also passed 12th class (10+2) or equivalent with Maths and Science as main subject.	20 - 25 Years
(g)	Junior Commissioned Officer Religious Teacher (All Arms)	Graduate in any discipline. In addition requisite qualification in his own religious denomination.	27-34 Years
(h)	Junior Commissioned Officer Catering (Army Service Corps)	10+2 of equivalent exam and Diploma /Certificate Course of duration of one year or more in Cookery/Hotel Management and Catering Tech from a recognized University/Food Craft Institute. AICTE recognition is not mandatory.	
(j)	Havildar Education(Army Education Corps)	MA/MSc/MCA or BA/BSc/BCA/BSc(IT) with B.Ed.	20 - 25 Years

Conclusion

Here it would be apt to reiterate, that all professions serve our motherland, but none of them is in the same league as the Army, for this is the only profession which offers you opportunity to live up to these stirring lines.

"**To every man upon this earth,**

Earth comes sooner or later

And how can a man die better

Facing fearful odds

For the ashes of his father

And the temple of his Gods" - Lord Macauley

CHAPTER – VII

HONOURS AND AWARDS

Introduction

The Armed Forces of India are awarded many military decorations, honours and awards. The awards and honours are awarded for extraordinary bravery and courage, as well as for distinguished service during times of war and peace. For the purpose of classification, Indian Armed Forces honours and awards can be divided into two categories:

(a) Gallantry Awards

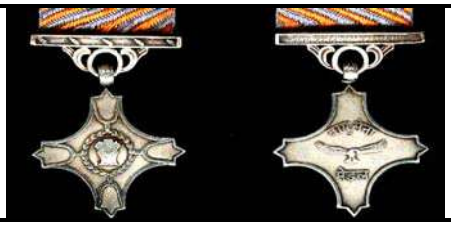
(b) Non-Gallantry awards / Distinguished Service Awards

Gallantry Awards

Gallantry awards are divided into two categories:

(a) **Gallantry in the Face of Enemy (War Time)**.

S. No	Name of the Award	Image
(i)	Param Vir Chakra	
(ii)	Maha Vir Chakra	
(iii)	Vir Chakra	
(iv)	Sena Medal	

(v)	Nao Sena Medal	
(vi)	Vayu Sena Medal	
(vii)	Mention in Despatches	
(viii)	Chiefs of Staff Commendation Card	

(b) **Gallantry Other than in the Face of Enemy (Peace Time)**.

S. No	Name of the Award	Image
(i)	Ashoka Chakra	
(ii)	Kirti Chakra	
(iii)	Shaurya Chakra	

Non-Gallantry /Distinguished Service Awards

S. No	Name of the Award	Image
(a)	Sarvottam Yudh Seva Medal	
(b)	Param Vishisht Seva Medal	
(c)	Uttam Yudh Seva Medal	
(d)	Ati Vishisht Seva Medal	
(e)	Yuddh Seva Medal	
(f)	Vishisht Seva Medal	

NOTE:- Award like Sena Medal is given for all three catagories i.e. during War,Peace and also as a Distinguished Award.

Conclusion

Honours and Awards are ultimate recognition by the nation for unmatched act of bravery and selfless service, dedication and supreme sacrifice by soldiers /civilian /or any other professional.

Summary

- The Army is divided into seven Commands i.e. Northern, Western, Central, Southern, South Western, Eastern and Training Command.

- The Navy is divided into three Commands i.e. Western Naval Command, Eastern Naval Command and Southern Naval Command.

- The Air Force is organized into seven commands i.e. Western Air Command, Central Air Command, Eastern Air Command, South Western Air Command, Southern Air Command, Training Command and Maintenance Command.

- The Combat Commands are grouped as Corps, Divisions and Brigades. These are commanded by an Officer of the rank of Lieutenant General, Major General and Brigadier respectively.

- There are three major arms in army:-

  - Fighting arms – Armour, Infantry and Mechanised Infantry.

  - Supporting Arms – Artillery, Engineers, Army Air Defence, Army Aviation Corps and Signals.

  - Supporting Services – Army Service Corps, Army Medical Corps, Army Ordnance Corps, Corps of Electronic and Mechanical Engineers.

- Field Marshal is an honorary rank given to a General for his invaluable service and will continue to serve the rest of his term with the honorary rank.

- Admiral of the Fleet is an honorary rank given to an admiral for his invaluable service and will continue to serve the rest of his term with the honorary rank.

- Marshal of the Air Force is an honorary rank given to an Air Chief Marshal for his invaluable service.

- Indian Armed Forces honours and awards can be divided into two categories; Gallantry Awards & Non-Gallantry awards / Distinguished Service Awards.

- Permanent Commission (PC) is granted through the Indian Military Academy (IMA) Dehradun and OTA Gaya Short Service Commission (SSC) is granted through Officers Training Academy OTA Chennai.

- Permanent Commission:

  - Combined Defence Service Examination (CDSE)
  - 10+2 Tech Entry
  - University Entry Scheme (Pre Final Year Students Only)
  - Technical Graduate Course.

- NCC special entry is part of OTA,Chennai.

Comprehension Questions:

Q1. Answer the following in about 50 words:

(a) Write a short note on Chief of Army Staff.

(b) What are Static Formations in Army?

(c) What do you understand by Air Headquarter?

(d) Which all are the fighting arms of Indan army?

Q2. Answer the following in about 75 words:

(a) Write a short note on types of Command Headquarters in Army.

(b) Write short note on Naval Headquarter and its Commands.

(c) Write a short note on Air Force Command Headquarters.

(d) Explain role and task of following:-

(i) Infantry

(ii) Artillery

(iii) Engineers

Q3. Answer the following in about 150 words:

(a) What do you understand by Field Formation?

(b) Give modes of entry in IMA.

Q4. Answer the following in about 250 words:

(a) Give the rank structure of Officers of Army, Navy and Air Force.

(b) What are Supporting Arms?

(c) Which all are Gallantry awards?

UNIT 2 : MAP READING

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UNIT 2 : MAP READING

Knowledge	Understanding	Application Skill	Evaluation
Introduction to types of Maps and Conventional Signs	Maps and the Conventional signs to be used.	Ability to read the Map using Conventional signs.	Activities, work sheets, assignments, and mock exercises
Scales and Grid System	Use of Scale and the importance of Grid system in map marking.	Ability to read the map and relate it to ground.	Activities, work sheets, assignments, and mock exercises
Topographical Forms and Technical Terms	Definitions used for geographical features.	Ability to grasp Map Reading classes and lessons faster.	Activities, work sheets and assignments,
Relief, Contours and Gradients	Height, shape and slope of the ground.	The cadets can relate the ground to the Map.	Activities, work sheets, assignments, and mock exercises
Cardinal Points and Types of North	Directions, Degrees and the types of North.	The cadets can indicate places and objects using Direction and Degrees.	Activities, work sheets, assignments, and mock exercises
Types of Bearing and use of Service Protractor	Use of Bearing and Service Protractor to locate places on map.	Ability to locate places and objects on ground.	Activities, work sheets, assignments, and mock exercises
Prismatic Compass and its use and GPS	Use of Compass and GPS to locate places on ground.	Ability to navigate to the given location on ground using Compass and GPS.	Activities, work sheets, assignments, and mock exercises
Map to Ground, Ground to Map	Use of Map for finding Location on Ground and corelate map with Ground	Ability of finding objects from Map to Ground and Ground to Map	Activities, work sheets, assignments, and mock exercises

CHAPTER - I

INTRODUCTION TO MAPS AND CONVENTIONAL SIGNS

Definition And Types Of Map

Definition of Map

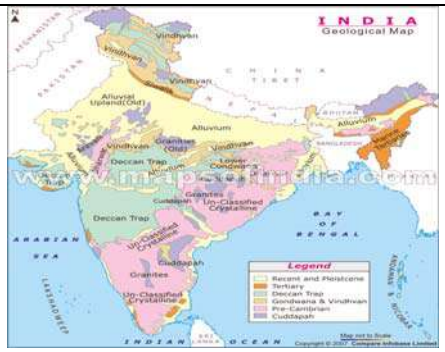
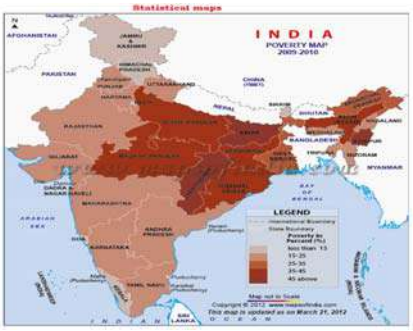
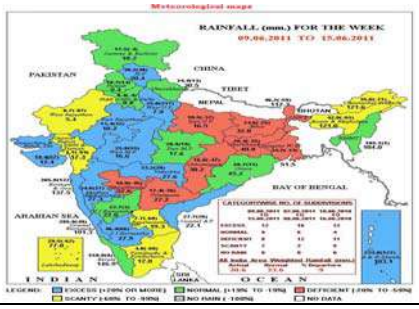
A map represents selected natural and manmade features of the whole or part of the earth's surface on a sheet of paper. It has a definite scale and correct relative geographical positions and elevations. Symbols, colour differences and contours on map help to show the physical features *i.e.* mountains, valleys and plains.Maps show important natural and cultural features such as relief, vegetation, water bodies, cultivated land, settlements, and transportation networks, etc. These maps are prepared and published by the National Mapping Organisation of each country. The science of making maps is called as Cartography. For example, the Survey of India prepares the topographical maps in India for the entire country. A map, however, has the following limitations:-

(a) It is seldom, if ever, up to date.
(b) It cannot show everything that exists on the ground.

Types of Maps

There are different types of maps depending on their scale and their use. Important types of maps are as under:-

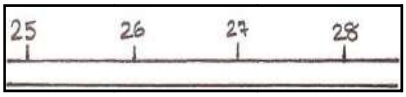
S No	Types Of Maps	Maps
(a)	**Atlas Maps:** These are small scale maps showing whole country's continents, oceans or even world on one sheet.	
(b)	**Topographical Maps:** These are maps with which we are concerned in map reading. Survey of India maps are all topographical maps.	

(c)	**Relief Maps:** These are solid maps built as an actual model of the ground.	
(d)	**Rail/Road Maps:** These are intended only for use in connection with rail/road movements.	
(e)	**Other Maps:** (i) **Geographical Maps** showing the structure of the rock formation below the top soil.	
	(ii) **Statistical Maps** showing information of such things as population, industries, mineral ores, crops etc.	
	(iv) **Meteorological Maps** showing information regarding winds, atmospheric pressures and so on.	

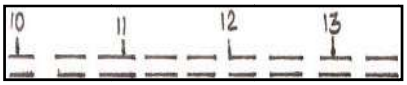
PART II : CONVENTIONAL SIGNS

6. Conventional signs are symbols used to represent certain artificial or natural features/objects on the map. Some common types of conventional signs are listed as follows in Figure - 1

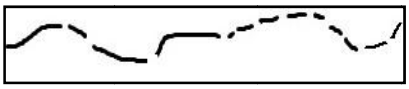
(a) Roads-metalledwith Km-stone.



(b) Roads-unmetalledwith Km-stone.

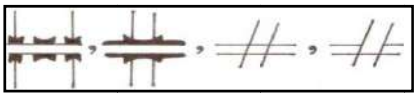


(c) Cart track, camel track, mule path.



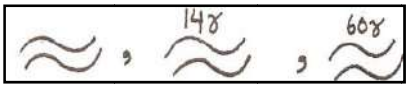
(d) Footpath, roadin bedofstream, Level crossing.

(e) Bridges with pier sand without, Causeway, Ford



(f) Stream-Approx water course, canal

(g) Riverbanks,shelving, steep 10to 20 feet,, over 20



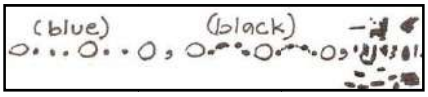
(h) River beds-dry, with stream,

With island and rocks

(j) Tidal river-shoal-submergedrocks

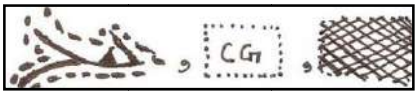
(k) Wells-lined and unlined, spring, Tanks - perennial and dry

(l) Kaeaz - in, flow and dry, swamp,Reeds.



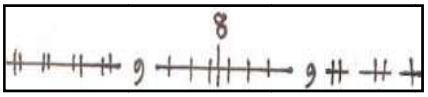
(m) Embankments, road or rail, tank cutting tunnel.

(n) Brokenground, campingground, Vineontrellis.



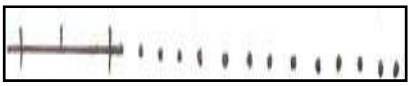
(o) Railways,broadgauge, Double, Single (Station), under construction.

(p) Railwaysother Gauges, double,



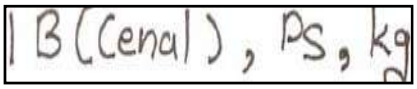
Single (milestone)and underConstruction

(q) Light railwayor tramway, Telegraphline



(r) Circuithouse,Dak, Travellers, Bungalow,RestHouse.

(s) Inspectionbungalow,Police station, BuddhistKyaung

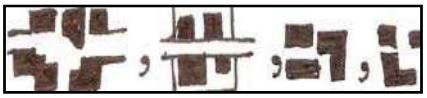


(t) Postoffice, telegraph office, Combined office.

(u) Forest-reserved,stateandprotected

(v) Spacednames, Administrative, Locality,tribal.

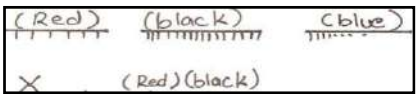
(w) Villages :open, walled,ruined, desertedantiquities.



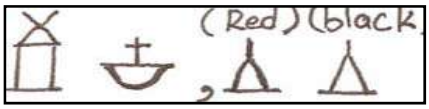
(x) Huts,permanent andtemporary, Fort,Towerchhatvi.

(y) Church, Mosque, Temple, Pagoda, Idgah, tomb.

(z) Dams, masonary and Earthwork-ware (anicut in madras).



(aa) Lighthouse-Lightship-Buoys.



(ab) Grass high and low cane, Bamboo plantation.

(ac) Palms, Areca, palmyra, Other conifer, other trees, scrub.

(ad) Contours, Formlines, Rocky slopes.

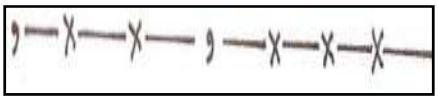
(ae) Cliffs-sand features

(af) Moraine, Glacier, Screen

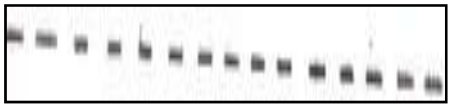
(ag) Boundary demarcated; International.

(ah) Boundary demarcated; Province or state

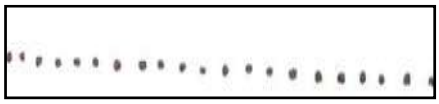
(aj) Boundary undermarcated; International, province or state.



(ak) Boundary; district or Tribal



(al) Boundary; Sub Divisional, tehsil taluka or township forest



(am) Boundary pillars, surveyed, not found

(an) Graves oil wells, Mine-Battle field with year

(ao) Heights triangulated, Bench Mark

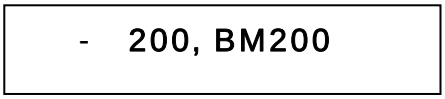


Figure 1

Conclusion

A thorough knowledge of the map and conventional signs is very important to know about the area not seen before and to relate the objects seen on ground and their conventional signs on map. Conventional symbols are used to maintain the clarity of the map. Most of conventional symbols correspond to the general layout of the object and are seldom confused with others. It is very important for all to know and identify these symbols on the map to make map reading easier.

CHAPTER - II

SCALES AND GRID SYSTEMS

Scales And Grid Systems

Scale

Scales help us work out distance to our destination and therefore how long it will take us to get there. The smaller the area a map covers, the larger the scale will be. So if you have a map on a square meter of paper and the scale of the map is 1:50,000 and another map on the same size paper with a scale of 1:25,000, the area covered by the first map will be 4 times the area covered by the second map. Every map will carry a scale, not just the value of say 1:50,000, but also a depiction of that scale.

Definition of Scale

Scale is the proportion which the distances between the two points on the map that relates to the distance between two points on the ground. Everything on the map must be reduced and the extent to which the size is reduced makes the scale of the map.

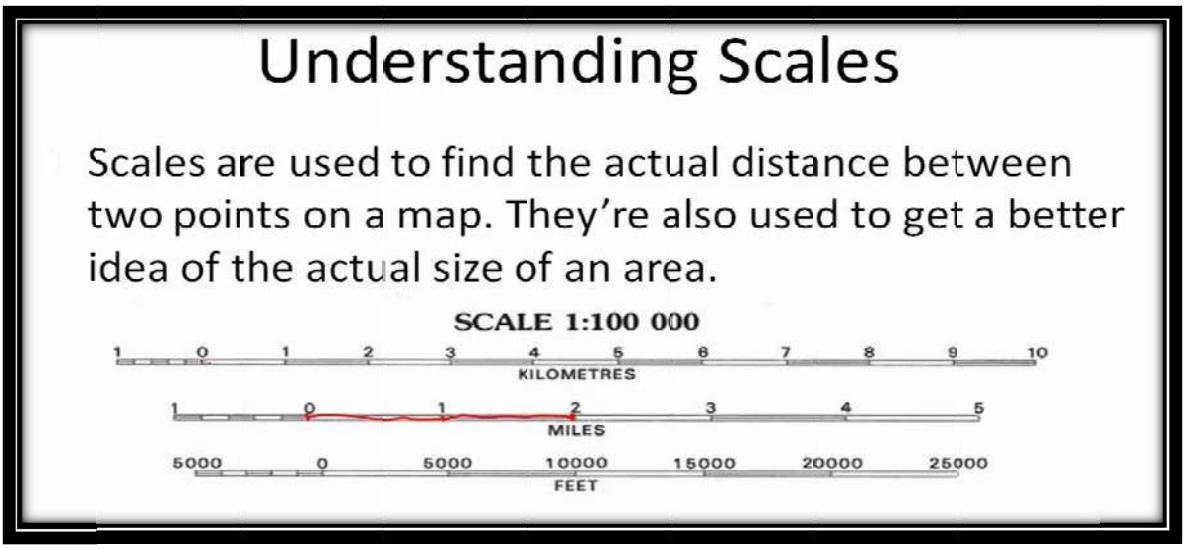


Figure 2

Methods of Expressing a Scale

There are two methods of expressing a scale:-

(a) **In Words**. 1 inch to 1 mile, it means that 1 inch on the map represents 1 mile on the ground.

(b) **As a Representative Fraction (RF)**. This is the scale expressed in the form of a fraction. If the scale of a map is given as 1/100000 this means that one unit of the map represents 100000 of the same unit on the ground. It could mean that one centimetre on the map represents 100000 cm on the ground.

Scale Line

Below the scale is the scale line by means of which distance on the map can be measured. In this scale 2 cm on map is equal to 1 km on ground. An example of the scale line for a scale "2 cm to 1 km" is at Fig-3 below:-

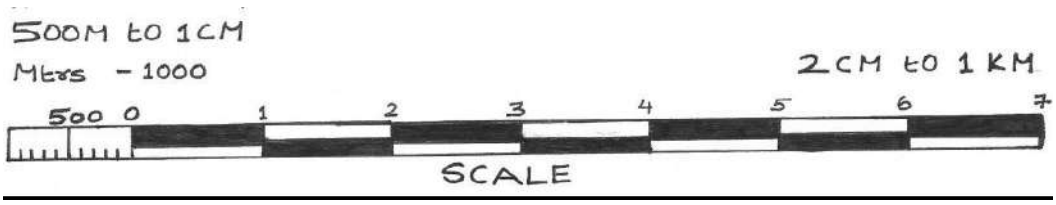


Figure-3

PART II : DEFINITION OF GRID AND GRID LINES

THE GRID is a systematic pattern on Earth by laying a vertical and horizontal grid over the Earth's layout. The vertical lines are called the longitude and the horizontal lines are known as the latitude. Combinations of
these lines are known as **Grid Lines**.

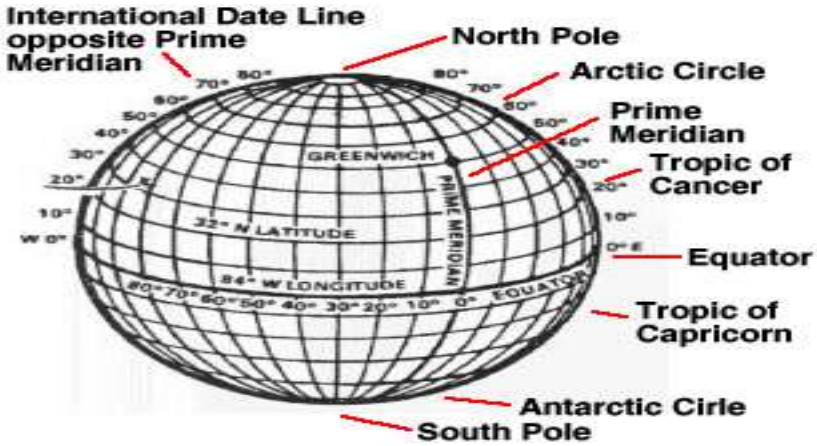


Figure 4

Purpose

The purpose of Grid Lines is to make possible giving and reading Grid References and to facilitate measurement of bearings.

Method of Grid Reference

In giving a Grid Reference following rules should be remembered:-

(a) A reference must always contain an even number of figures, normally it contains six figures.

(b) EASTING lines are the black colour vertical lines.

(c) NORTHING lines are the black colour horizontal lines.

(d) Always count along the **EASTING** lines first from the WEST to EAST and then **NORTHING** from SOUTH to NORTH.

(e) Grid References are of different types viz. Four Figure, Six Figure, Eight Figure and Ten Figur.

(f) Mostly Six Figure Grid Reference is used.

(g) For six figure Grid Reference the third and the Sixth figure represent the divisions of 1000 meters square to the nearest 10th part, so they have to be estimated and for these figures a slight latitude is allowed.

(h) If a general Grid Reference is to be given or there is only one such object in one square e.g. bridge, temple, road junction then its identity and four figure grid reference would suffice.

Example

As we already said when giving a four figured grid reference, always give the eastings number first and the northings number second.

In the diagram below, the number 4 is in square 28 across (on the horizontal) and square 54 up (on the vertical) and therefore, the four-figure grid reference is ‘2854’.

The other number in the square above would get the following grid:-

1. 2755
2. 2855
3. 2754
4. 2854

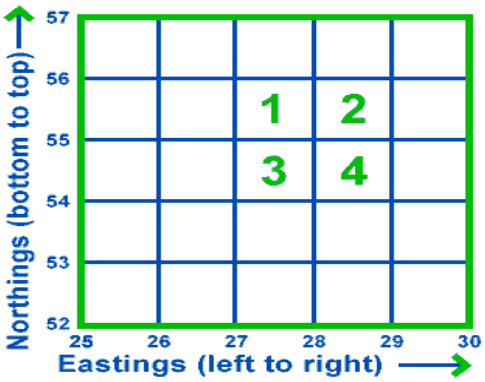


Figure 5a

In order to be little more precise with your grid references, you can give a 6 figure grid reference as shown in diagram 5b.

Here, we have taken the lower right square from the previous diagram and divided it by 10 in each direction. The pink circle is in the four-figure grid reference square ‘2552’, but more accurately it is 2 tenth across and 7 tenths up with in that enlarged grid square, therefore the six-figure map reference is ‘252527’. The red circle has 6 figure grid references of 257522.

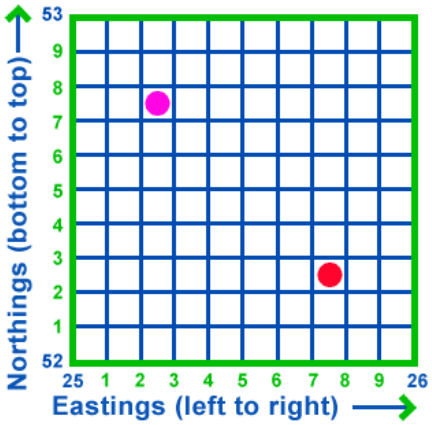


Figure 5b

Conclusion

For effective and correct map reading, it is essential that cadets should be able to differentiate between Maps of different scales and find out the correct Grid Reference of the object. The cadets should also be able to relate the scale on map to the actual distance of object on ground.

CHAPTER - III

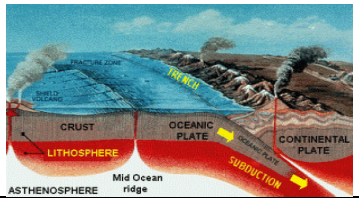
TOPOGRAPHICAL FORMS AND TECHNICAL TERMS

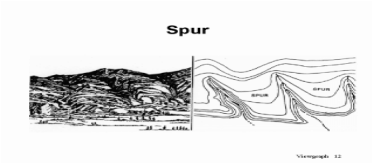
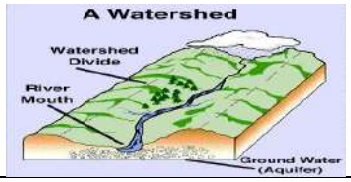
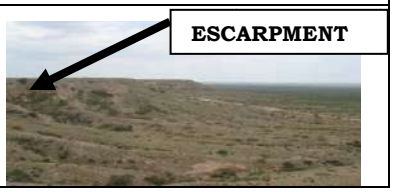
Introduction

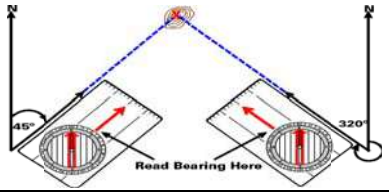
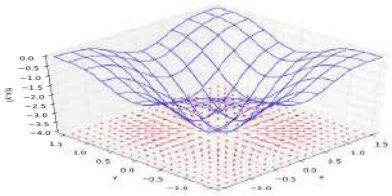
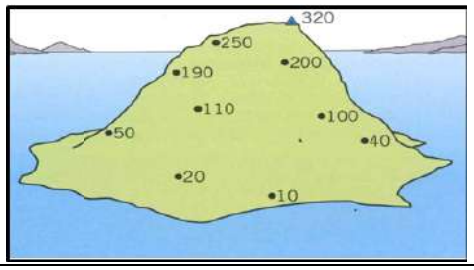
Commonly used technical terms and topographical forms is a name used to describe geographical features which occur on the ground.

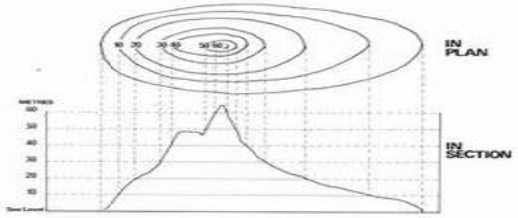
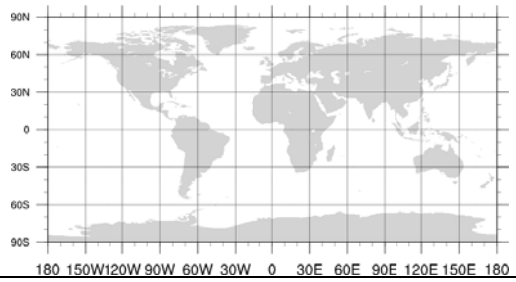
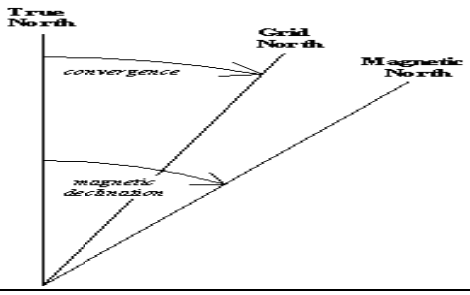
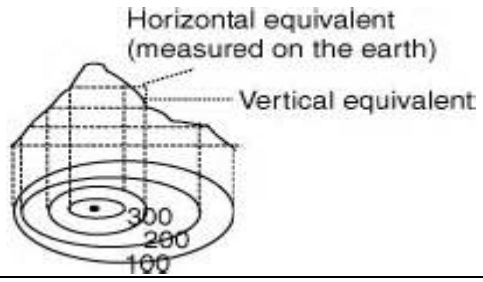
Topographical Forms And Technical Terms

Topographical forms are names used to describe geographical features which occur on the ground. The following are more commonly used:-

S. No	Topographical Forms	Samples
(a)	**Basin:** An area of fairly level ground surrounded by hills or the area drained by a river or its distributaries.	
(b)	**Col or saddle:** A narrow ridge of high land joining up to higher hills.	
(c)	**Crest:** A highest part of hill or mountain range. It is that line on the range of hills or mountains from which the ground slopes down in opposite direction.	
(d)	**Dead Ground:** Ground which is because of undulations or hills is not visible to the observer.	
(e)	**Knoll:** A small isolated hill.	
(f)	**Plateau:** A table land, an elevated region of considerable extent generally of same level.	
(g)	**Ridge:** A line along a hill or range of hills or mountains from which water flows in opposite directions.	

(h)	**Spur:** A piece of high ground jutting out of range of hills into lower ground.	
(i)	**Watershed:** The line separating the water flowing in two different rivers systems, the edge of a river basin.	
(j)	**Defile:** Any feature whether natural or artificial which could cause a body of troops to contract its front. An example of a natural defile is mountain pass while bridge is an example of an artificial defile.	
(k)	**Escarpment:** The steep hill side formed by a sudden drop in the general ground level usually from a plateau.	

(l)	**Bearing:** The angle formed by a line joining two points and the North and South line. Bearings are always measured clockwise.	
(m)	**Bench Mark:** A permanent mark usually cut into a wall recording exact height for future reference. It is marked as BM with height on Ordnance Survey Maps.	
(n)	**Gradient:** The slope of a hill expressed as a fraction.	
(o)	**Spot Height:** A point on a map whose height has been determined by Survey methods. These are usually shown as block dot with a number giving exact height above sea level in meters.	

(p)	**Trigonometric Point:** A point fixed during the triangulation at the beginning of a survey, marked on Ordnance Survey Maps by a small triangle with the height.	
(q)	**Contours:** A line drawn on the map joining up all points of equal height above sea level	
(r)	**Grid Lines:** Lines running parallel to and at right angle to a North and south or East and West, Grid North is the direction of the North South grid lines on a map.	
(s)	**Magnetic Variation:** The difference between True North and Magnetic North	
(t)	**Horizontal Equivalent:** The distance measured on the map between adjacent contour lines. It varies according to the nature of the relief.	

Conclusion

To be proficient in Map Reading and understand it better, it is very important for all to understand the various topographical forms and technical terms used in Map Reading. One should be able to identify the topographical form in map and co-relate it with the ground.

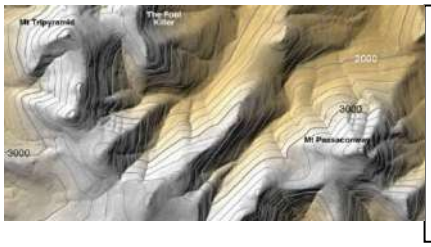
CHAPTER IV

RELIEF, CONTOURS AND GRADIENTS

Relief And Slopes

Relief and Slopes.

(a) **RELIEF** means the shape of the ground in a vertical plane.



Representation of a relief on a map means showing of heights and shape of the ground above or below or datum which is normally sea level. Thus it shows the broad features and relative heights of highlands and low lands which are portrayed on the map. **Relief** is shown with means of hachure, shading, form lines, layer tints, contours, spot heights, trig heights, bench marks and relative heights.

(b) **SLOPE** means a surface of which one end or side is at a higher level than another. Contour lines represent to slope that is, closer the contour lines are, the steeper is the slope of the hill. If representation of slopes the contour lines are far apart, the slope down is gradual.

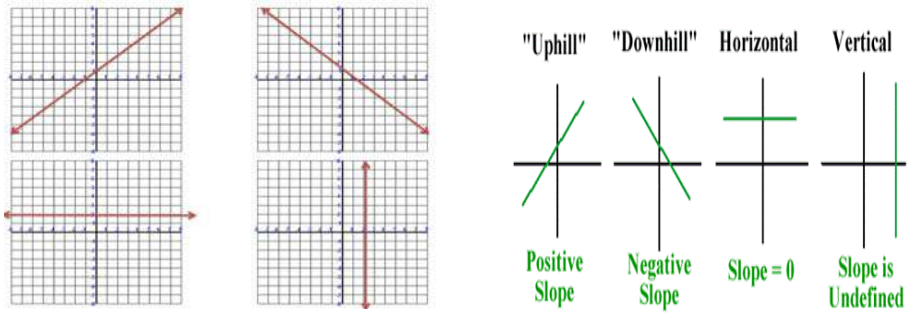


Figure 6

(c) **Types of Slope** The slopes are of two types, convex and concave. A convex slope is the one which bulges outwards and concave slope is the one which curves inwards.

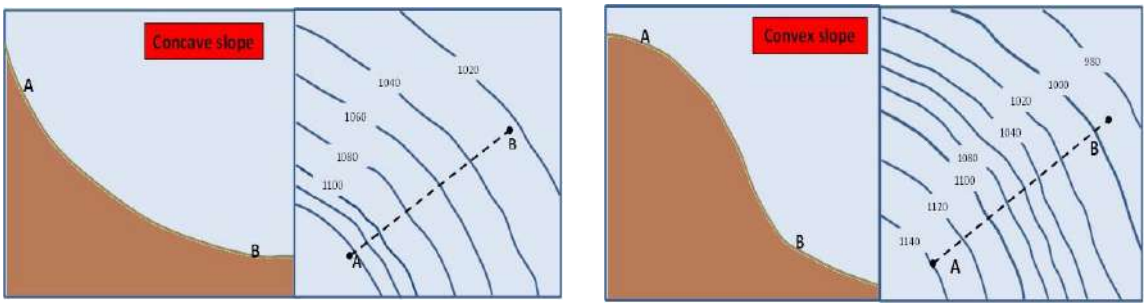


Figure 7

Contours And Gradients

CONTOUR is an imaginary line drawn on map showing same height from mean sea level. If you walk along a contour line you neither gain nor loose elevation.

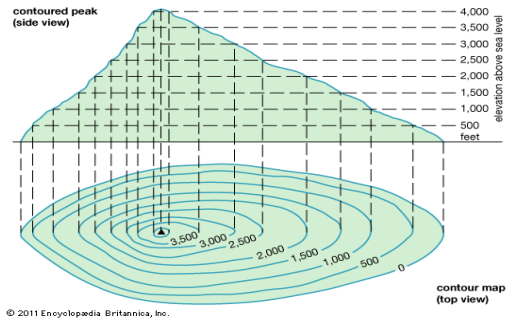


Figure 8

Characteristics of Contours.

(a) Contours accurately show height, shape and slope of the ground.

(b) Contours are shown generally in brown.

(c) Height is marked on every fifth contour.

(d) Contour lines vary in appearance.

(e) These lines never touch or cross each other.

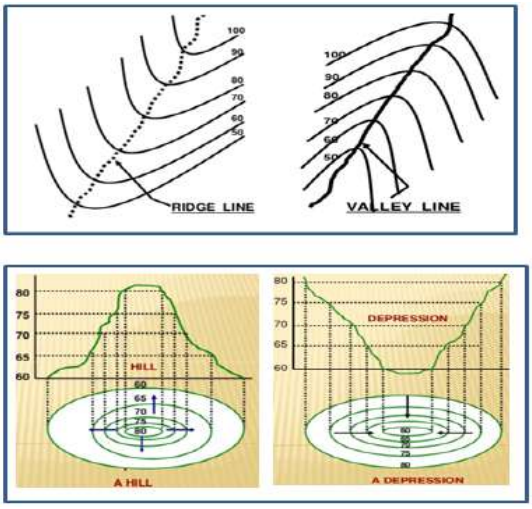


Figure 9

Vertical Interval (VI). The rise between successive contour lines is known as the vertical interval (VI). On map scale 1 inch to 1 mile, the VI of each contour line is 50 feet while on the 1/4 inch to a mile it is 250 feet.

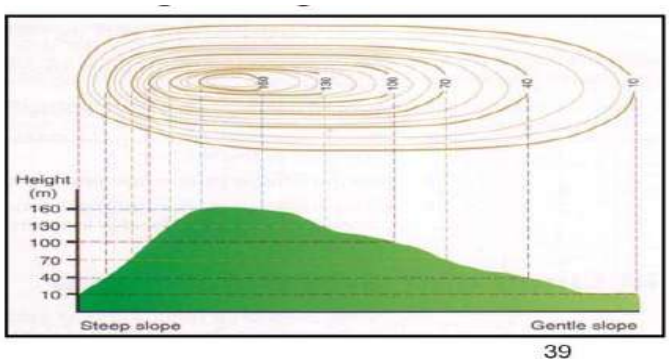


Figure 10

Horizontal Equivalent (HE). The distance measured flat on the map between adjacent contour lines is horizontal equivalent (HE).

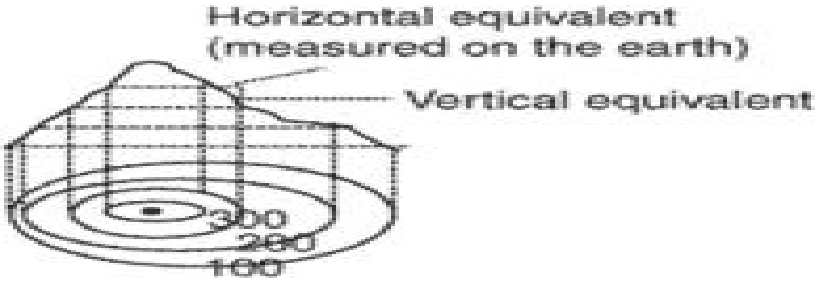


Figure 11

Gradient. The slope of the ground may be expressed as the angle the ground makes with the horizontal but more commonly it is expressed as a gradient – 1 in 15 or 1 in 20, which may be written as 1/15 or 1/20. A gradient of 1 in 15 means that in a horizontal distance of 15 m the ground rises or falls 1 meter so the gradient of the slope is the relation that its rise or fall bears to its length measured on the ground or in other words it is the ratio of the vertical interval to horizontal equivalent. It is independent of any unit of measurement. Simple Formula is VI/HE = Gradient.

The horizontal equivalent is obtained by measuring on the map and vertical interval by subtracting the contour heights.

You may often need to know just how steep a piece of ground is, whether a road is too steep for a certain type of vehicle to negotiate. The gradient can be worked out quickly from a contoured map.

Measuring Gradient. The rise or fall of a slope can be expressed in following two ways:-

(a) In an Angle or Degree of Slope.

(b) The tangent of the Angle or Gradient.

Conclusion

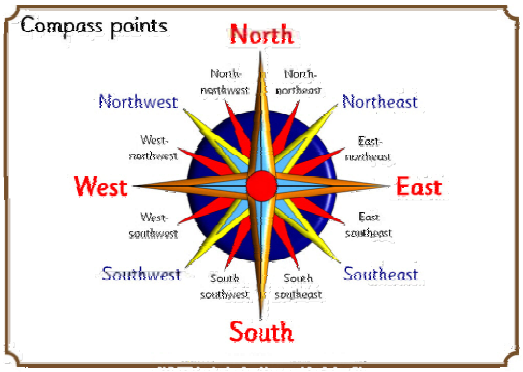
Contour reading is very important as it shows the height, shape and slope of the ground. For correct map reading, one should be able to read the contour lines and select the correct route for the navigation.

CHAPTER - V

CARDINAL POINTS AND TYPES OF NORTH

Cardinal Points And Types Of North

Cardinal Points. North, South, East and West are known as the cardinal points. If the North point is taken as zero degrees, East will be 90^0, South will be 180^0, and the West point forms an angle of 270^0. In addition to four Cardinal Points and four intermediate four major directions, there are eight minor directions. The names and degrees are as under:-



CARDINAL POINTS
Figure 12

(a)	North North East	-	22 & ½ Degrees
(b)	East North East	-	67 & ½ Degrees
(c)	East South East	-	112 & ½ Degrees
(d)	South South East	-	157 & ½ Degrees
(e)	South South West	-	202 & ½ Degrees
(f)	West South West	-	247 & ½ Degrees
(g)	West North West	-	292 & ½ Degrees
(h)	North North West	-	337 & ½ Degrees

Types Of North And Angles Between North Points

Types of North

There are three types of North :-

(a) **True North**. The direction of North Pole from the observer.

(b) **Grid North**. North as per the Grid on map.

(c) **Magnetic North**. It is the point to which a magnetic needle points, when freely suspended.

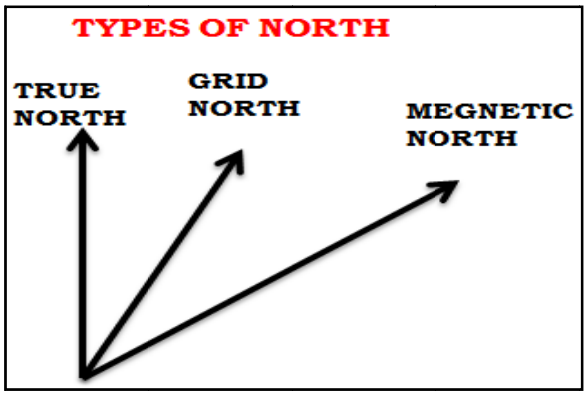


Figure 13

Magnetic Variation And Grid Convergence

Magnetic Variation

True North is Constant. Magnetic North is the point to which the compass needle points. The needle does not point directly to True North, but a little West or East of True North. The point towards which the needle swings is known as Magnetic North and the difference between True North and Magnetic North is called Magnetic Variation. The amount of the Magnetic Variation depends upon two factors, time and place as at Fig below.

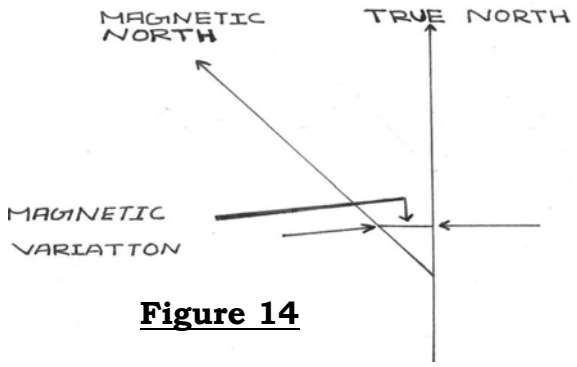


Figure 14

Magnetic Variation

Time. The Variation is not constant but is, gradually changing and even the change each year is not constant but the difference being negligible it is taken to be constant. On the top margin of a map will be found a statement giving the Magnetic Variation. To bring this up-to-date, the year of issue of the map must be noted and for every year that has passed since then the applicable change annually subtracted or added from the figure given as applicable.

Place. The amount of the Magnetic Variation also changes in different parts of the world and indeed in different parts of the country.

Grid Convergence

The angular difference between Grid and True North is called the Angle of Convergence or the Grid Convergence

Conclusion

Knowledge about Cardinal points and types of North is the first step towards learning map reading. This knowledge is necessary not only with respect to maintaining direction during navigation; but also comes handy in our other daily activities. A good navigator has the ability to quickly orient himself as per the cardinal directions almost naturally; this helps in getting a sense of direction and helps to find out our own position subsequently.

CHAPTER - VI

TYPES OF BEARING AND USE OF SERVICE PROTRACTOR

Bearing And Its Conversion And Service Protractor

Types of Bearing. The clock wise angle formed by a straight line joining two points and direction of NORTH, is called the bearing between the two points. A bearing is always measured clockwise. They are three types as given below:-

(a) **Grid Bearing**. Measured on the map from the Grid North by the help of a protractor.

(b) **Magnetic Bearing**. Measured from Magnetic North by the compass.

(c) **True Bearing**. Calculated by finding out the relation of True NORTH and Grid NORTH or Magnetic NORTH.

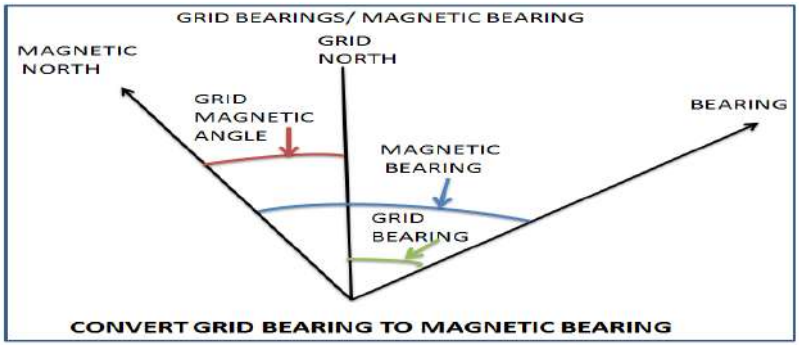


Figure 15

To Convert a Magnetic Bearing to a Grid Bearing. Suppose the bearing of a certain point P is measured with a compass and is found to be 160^0. To convert this Magnetic Bearing to a True Bearing, follow under mentioned steps:-

(a) First find out the Magnetic Variation of the Area. Magnetic Variation is given on the Top Right corner of each Map.

(b) Suppose 5^0 is the Magnetic Variation of the area. Now subtract this Magnetic Variation to the Magnetic Bearing.

(c) The resultant is the Grid Bearing i.e. $155^{0.}$

To Convert Grid Bearing to Magnetic Bearing.

(a) Measure the Grid Bearing of an object on the map with help of the service protractor from your own position.

(b) Suppose the Grid Bearing of the object is 150^0.

(c) Now, find out the Magnetic Variation of the area with the help of Map (Magnetic Variation is given on the Top right corner of the map). Suppose Magnetic Variation of the area is 6^0.

(d) Now, add this Magnetic Variation to the Grid Bearing.

(e) The resultant will be the Magnetic Bearing of the object i.e. 156^0.

Back Bearing. It is bearing taken opposite of original position of object. The rule is that if the bearing is less than 180^0 add 180^0 and if bearing is more than 180^0 then subtract 180^0. For example:-

(a) If forward bearing of an object is 70^0 then its back bearing will be $180^0 + 70^0 = 250^0$.

(b) If forward bearing of an object is 240 then its back bearing will be $240^0 - 180^0 = 60^0$.

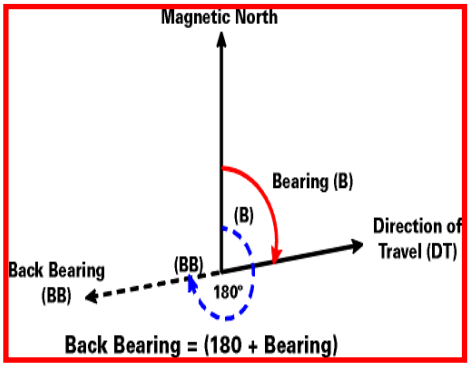


Figure 16

Service Protractor

The service protractor "A" Mark IV is an instrument used for plotting and measuring bearing on the map. It is an essential link between the compass and the map. With the help of the protractor the magnetic bearings have been converted to grid bearing and transferred to the map.

Description

The protractor is made of cardboard or ivories (flexible material) and it measures 6 inches long and 2 inches wide.

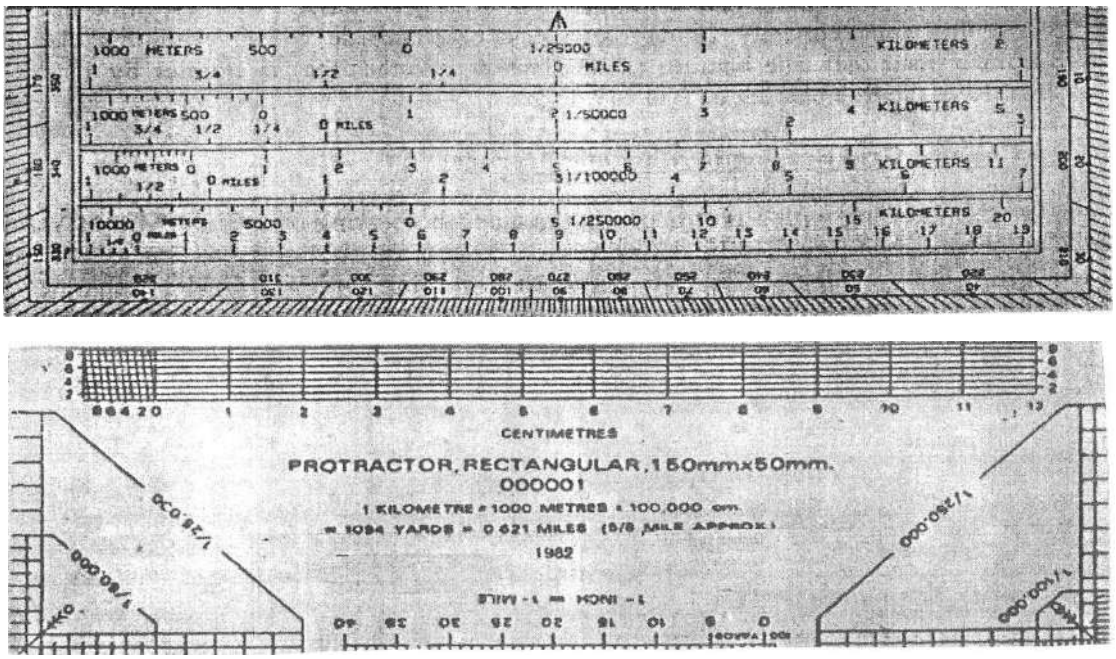


Figure 17

Scale of Protractors

The main purpose of the protractor is to measure angles and bearings as described in the preceding paragraphs. The protractor also shows on both its faces a number of the more common map scales. The respective scale lines are drawn out and divided into primary and secondary divisions in exactly the same way as at the bottom of the map.

Measuring a Bearing

The angle can be measured by drawing a line from the graduation to the point zero on the protractor. The required angle will be the gap between this line and the line joining the zero.

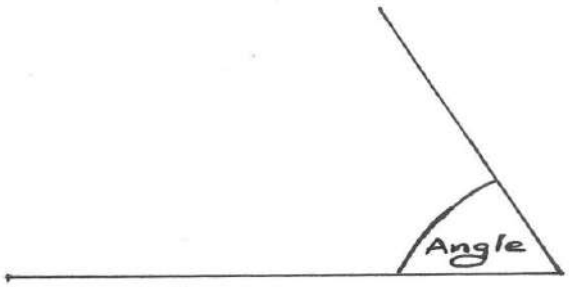


Figure 18

Uses of Protractor

The service protractor is an essential item of Map Reading. With its help one can:-

(a) Plot and measure bearing on paper or on a map. For bearing between 0 and 180 degrees their Zero edge must be on the LEFT and for 180 degrees -360 degrees it must be on the RIGHT.

(b) Measure distance in inches / cm correct up to l/100th

(c) Measure distance in yards, meters or miles on a map by using the appropriate scale

(d) For using the diagonal scale one must use an intermediate agent. Mark off the distance to be measured on the straight edge of a paper or by means of a divider and then put the paper or divider on the diagonal scale and measure

Conclusion

Taking out correct magnetic bearing of an object is very important. Converting Magnetic bearing into Grid bearing and vice versa should be known to identify object on map and ground. Use service protractor to find out the distance and grid bearing of one object to another on the map should be known for accurate navigation.

CHAPTER - VII

PRISMATIC COMPASS & ITS USE AND GPS

Introduction

The magnetic compass an instrument containing a magnetized pointer which shows the direction of magnetic north and bearings from it. The magnetic compass is used extensively in ships, aircraft and the various branches of the army to find and maintain direction. The Prismatic Compass is an accurate and reliable instrument of great value except during a "magnetic storm" or when subject to strong local magnetic field e.g. in polar regions. With the prismatic compass one can measure magnetic bearing on the ground.

Types Of Compass And Taking Bearing

Types of Compass and Taking Bearing. There are two types of prismatic compass, the dry and liquid filled. Liquid type is easier to use though it is less sensitive.

Description. Various parts are shown below:-

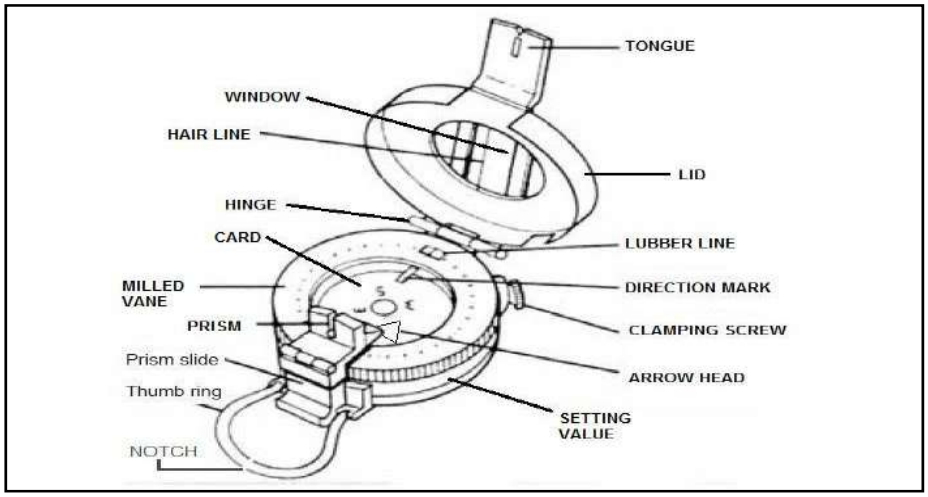


Figure 19

How to Take a Bearing

(a) Open the lid of compass.
(b) Turn the prism casing over.
(c) Put your thumb through the ring.
(d) Put your forefinger underneath the compass & hold it to horizontal level.
(e) Bring the prism up to the eye.
(f) See through the prism via hairline to object.
(g) Read the bearing.

Navigation By Compass, Compass Errors And Gps

Navigation By Compass. Sometimes it may be necessary to march by night or in thick jungle area in the direction of a certain point; since the point may not be visible in darkness or thick vegetation. In such a situation follow the steps mentioned below

(a) Calculate the bearing from the Map i.e Grid Bearing

(b) Convert it to the magnetic bearing and cater for the compass error to arrive at a figure (say 250 degree), the compass must now be set to this figure to march on it.

(c) Unscrew the clamping screw

(d) Rotate the milled vane to 25 till it comes exactly on the “lubber line”

(e) Tighten the clamping screw

(f) Compass is now set for 250 degree

(g) To obtain the direction of march, open the lid fully and keep the compass on the palm.

(h) Now turn left or right till arrow head comes under the direction mark

(j) Direction of march is given by the direction in which tongue is pointing

Compass Error. Sometimes due to the presence of impurities in the material of which a compass is made or other reasons, the magnetic needle may not point toward the magnetic NORTH but a little to the EAST or WEST of it. This deviation of the magnetic needle in the compass from the magnetic NORTH is termed compass error.

Global Positioning System. Global Positioning System (GPS) refers to a system of satellites and receivers that allows people and devices to pin point their precise location on the earth. The first GPS satellite was launched in 1974. GPS is funded and controlled by the United States, Department of Defence. Present technology provides very handy and accurate navigation. GPS is used by:-

(a) Commonly used in day to day life by general public like for

(b) Commonly used in day to day life by general public like for travelling purposes

(c) Fishermen and hikers to navigate.

(d) Armed Forces, inbuilt its equipments and in uses in battlefields.

Conclusion

It is very important for a soldier to understand the prismatic compass and be proficient in using the same. An individual should know how to take the bearing set the compass and then march on the bearing set on the compass. The compass should be checked for correctness and errors if any be noted on the inside of the lid. While using the compass ensure that there is no iron objects nearby.

CHAPTER - VIII

SETTING OF A MAP, FINDING NORTH AND OWN POSITION

Methods Of Setting Map

Setting of Map

A map is said to be set or oriented when it is placed such that it corresponds directly with the ground i.e. when true NORTH on the map points to true NORTH on the ground.

Methods of Setting a Map

There are two methods of setting a map - by compass and by objects on the ground.

Setting by Compass

Draw a line showing magnetic NORTH from a point on a grid line. Open the compass and lay it flat on the map over the above drawn diagram, which will show the magnetic variation so that the hair line on the window lies along the magnetic NORTH line on the diagram. Then turn both the map and the compass till the needle points along the hair line. The map is now set, since the magnetic NORTH line on the map is pointing in the direction of magnetic NORTH as indicated by the compass needle.

Finding North And Own Position

Finding North

Without Compass. The position of NORTH can be discovered by one of the following methods :-

Equal Altitude Method.

(i) Take a fairly large piece of paper or card board and spread it flat on the ground. In the centre fix a pencil or piece of wood perpendicular to the ground. It can be done with the help of a coin fixed at the base of pencil or wood with sealing wax or by directly pushing it in the ground.

(ii) Wait till after mid-day until the sun has moved around sufficiently to throw another shadow as indicated by the dotted line AD i.e. of the same

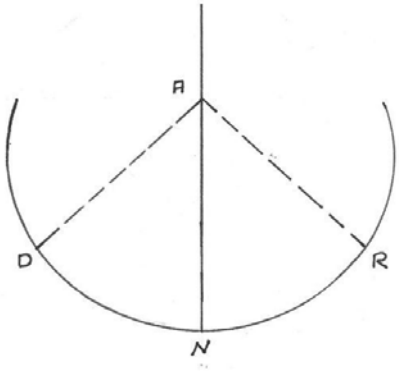


Figure 20

(b) **By Stars**. In the Northern hemisphere, the Pole star indicates the position of True North to within 2 degree. It is a bright star and it can be found by protruding a line from Great Bear. The pole star will be found slightly off this line on the side remote from the remaining stars of the Great Bear.

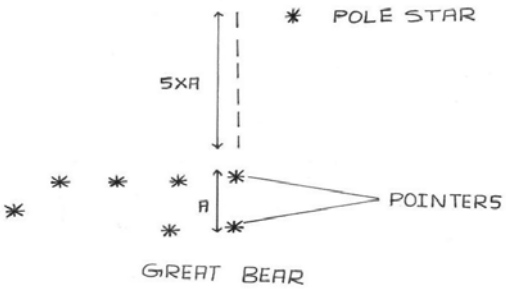


Figure 21

Finding Own Position on Map

Methods of Finding Own Position on Map

(a) By resection method or Compass method

(b) By Inspection method.

Resection with Compass Method.

(a) Recognise three prominent features (A, B, C) on map and on the ground as well. These three prominent features must not be more than 180 or less than 30 apart. They should be as far as possible and clearly visible. The bearing of these points be taken and converted into Grid bearings.

(b) Then, on the map the back bearings from these points must be plotted, and the point of intersection will be the required position.

(c) In order to do an accurate resection, three or more objects are necessary. But in that case if the three rays do not intersect at the same point, a triangle of error is obtained. The centre of triangle is the point of your own position.

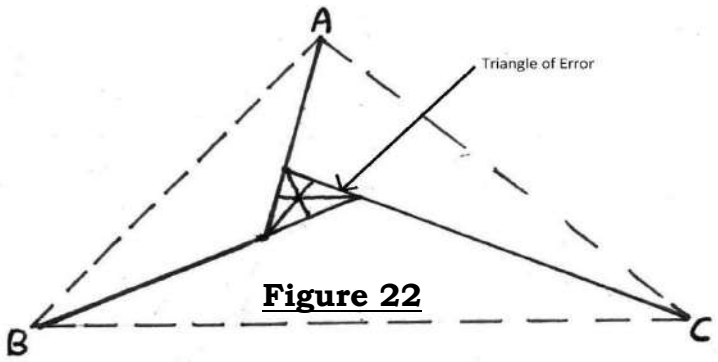


Figure 22

By Inspection Method. By inspections is meant a careful and detailed study of the ground and features both on the map and the ground and features on the map and on the ground. The method consists of :-

(a) Setting the map.

(b) Recognition of general area of own position on the map.

(c) A close study of the ground details

Conclusion

Setting of map and finding own position is the essence of the map reading training. One should be able to set the map with the help of compass and without it in minimum possible time. After setting of map, find out the two or three objects present on the ground and map be selected and resection method or compass method be used to find out the own position. Finding correct and accurate own position is very important for the navigation.

CHAPTER - IX

MAP TO GROUNG, GROUND TO MAP

Map To Ground

To find out the details of map on ground is known as map to ground. Following methods are used to identify objects from map to ground:-

(a) **Bearing and Distance Method.** With the help of bearing and distance, find out own position. Find out the distance of the object to be identified on ground with the help of a scale on the map. Using service protractor, find out the bearing of the object and convert it into magnetic bearing. Set the magnetic bearing on compass and look for the object in the given bearing. Estimating the distance on ground the object will be identified.

(b) **Direction and Distance Method.** Draw a line on the map between own position and object to be identified. Calculate its distance and using any of the following methods find the direction of the object:-

(i) With the help of a sight rule find the ground direction of the object.

(ii) With the help of two points on the map estimate the ground direction.

(iii) Place a foot ruler /pencil at own position and align it with line of the map.

(iv) Place a pin each at own position and at the object on the map. Align both pins and find general direction.

(c) **By Estimation Method.** In this method measuring bearing, distance and direction, object is identified with the help of other details in the proximity of the object.

Ground To Map

To find out an object indicated on ground on the map is called ground to map.

Conclusion

For correct map reading it is essential to locate the exact position of objects on ground and on map. Therefore, it is important for the cadets to understand the methods and the procedure to find objects from map to ground and from ground to map.

CHAPTER - X

POINT TO POINT MARCH

Navigation During Day

Methods Used During Day March

The methods used for navigation during day are :-

(a) **With Map Only.** In this method set the map and find your own position. Then, find out the position of the object. Note important landmarks in the vicinity of the object. Also find out the distance of the object. Finally find out the best route to reach the object. While marching, keep comparing the major landmarks en route. Distance can be measured with the help of steps. 100 metre corresponds to 120 steps approximately. On reaching the object, confirm its correctness with help of other details in the proximity.

(b) **Marching without Map.** There are two methods of marching without map:-

(i) **With Compass.** In order to use compass for marching point to point, there is a necessity to set the bearing on the compass.

(aa) **First Method.** If you know the bearing and distance of the object look through the eyehole and turn the compass until the hair line cuts the selected landmarks in the direction of march. Set the graduated circle to the appropriate bearing at the line of travel and turn the whole compass until the north end of the compass needle coincides with the letter N. Here hold the compass in front of you and march in the direction of the line of travel arrow. So long as the needle and the north arrow coincide the direction of travel arrow will remain on the required bearing. If there is difficulty in selecting landmarks at a large distance due to forest cover or undulating land, then closer landmarks can be selected. This could be repeated till you reach the object. If there is a major obstacle like river or nala which require deviation from the given bearing, one must come to the same line after crossing the obstacle and move on initial bearing.

(ab) **Second Method**. This method is used when bearing and distance of important landmarks en route are given. Set the bearing of the first landmark from start point and repeat this after reaching every intermediate landmark till you reach the object. In this method one is more confident while marching.

(ii) **Without Compass.** In this method you are required to march based on your memory power. Points to be kept in mind are:-

(aa) Before marching, recognize the object carefully and take note of other landmarks in the proximity.

(ab) Choose best route to the object and convert distance into steps/paces.

(ac) Take note of all the intermediate landmarks and their distances.

(ad) En route, ensure you are marching correctly.

(ae) Be careful while measuring distance in steps.

(af) If you deviate while crossing an obstacle, choose a mark across the obstacle. After crossing the obstacle come in line of the mark and recommence marching.

(ag) If you reach a wrong place, come back to the start point.

Inavigation During Night And Night March Chart

When a navigation party moves at night with the help of compass and night march chart, this is called night march.

(a) **During Moonlit Night.** If you have a compass, you can select two important land marks on the given bearing in a line and March on the same bearing and line. Repeat this, till you reach the object.

(b) **Starlit Night.** Select a prominent star at 30 degree on me horizon on the given bearing. Select a landmark in line of the star. March in line of the star and the land mark for approximately 15 minutes. Then select another star in the same bearing and repeat till you reach the object.

(c) **Cloudy Night.** Make a person march on the given bearing to a distance where he can be seen. Then the person holding compass marches, measuring the distance. First person is made to march again in the given bearing and the process is repeated till he reaches the object.

Items Required By Navigation Party

(a) Set compass as per bounds.

(b) Luminous stick.

(c) White cloth.

(d) Marching chart.

(e) White lime/ chalk.

(f) Stone pebbles for measuring steps.

(g) Frosted torch.

Composition of Navigation Party

(a) **Guide.** He carries a luminous stick and a compass set to a given bearing.

(b) **Assistant Guide.** He has a white piece of cloth at his back for Identification and a stick to measure depth of nala / pits.

(c) **Recorder.** He carries additional compass already set on given bearing, night march chart and stone pebbles. He measures the distance.

(d) **Scouts.** Number of scouts could be from 2 to 4 depending upon the route and tasks.

Night March Party

(a) **Assistant Guide.** He moves in front between left and right scouts. He walks for 20 steps and stops. Guide moves up to him and then indicates him to march ahead. Following actions will be taken while crossing an obstacle.

(i) Assistant guide and scouts will negotiate the obstacle from left / right. Guide and balance party will keep waiting. After crossing the obstacle assistant guide and scouts will come in the line of march.

(ii) Then guide and balance party will cross the obstacle and move behind assistant guide.

(b) **Guide.** Guide marches behind assistant guide so that required instructions can be given to him. He also carries a compass with set bearing so that he can correct the line of march of assistant guide.

(c) **Recorder.** Recorder marches behind the guide and measures the distance by steps / measuring tape.

Points to be kept in-Mind

(a) While marching, do not cough, talk or make any noise.
(b) While marching keep inter person distance in mind.
(c) Party must ensure safety and security.
(d) Smoking / using any kind of light is strictly prohibited.
(e) To read night march chart use frosted torch.

Night March Chart

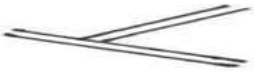
S NO	OBJECT	CONVENTIONAL SIGN	DIST ANCE	DEG REE
1	TEMPLE			
2	WELL		450 M	50
3	BRIDGE		200 M	40
4	TRACK JUNCTION		350 M	20
5	START POINT (SURVEY TREE)		300 M	70

Figure. 23

SUMMARY

- Map is the geographical representation of land on a paper.

- Scale is a proportion of two points on map and two points on the ground.

- Relief is applied to the shape of the ground in a vertical plane.

- Contour is an imaginary line following surface of the ground at a certain level.

- Gradient is the slope of the ground expressed as the angle the ground makes with the horizontal.

- Cardinal Points are the four major directions North, South, East and West.

- There are three types of North: True North is the direction of North pole, Magnetic North is the point which a magnetic needle points, Grid North is the direction of the North South grid lines on a map-point.

- Magnetic Variation the difference between True North and Magnetic North. It depends on time and place.

- Grid Convergence is the angular difference between Grid and True North.

- Bearing: The clock wise angle formed by a straight line joining two points and direction of North.

- The service protractor "A" Mark IV is an instrument used for plotting and measuring bearing on the map.

- Setting of Map: A map is said to be set or oriented when it is placed such that it corresponds directly with the ground. There are two methods of setting a map - by compass and by objects on the ground.

- Methods to find own position on map are:
  - By resection or compass method
  - By inspection method.

- Types of navigation:
  - Navigation during day
  - Night navigation and preparation of Night march chart

- Methods are used to identify objects from map to ground.

- Bearing and Distance Method.

- Direction and Distance Method.

- By Estimation Method.

- To find out an object indicated on ground on the map is called ground to map.

Comprehension Questions

Q1. **Answer the following in about 15 words:**

(a) What is spot height?

(b) What are Grid Lines and its purpose?

(c) How many types of Slopes are there?

(d) How many types of North are there?

Q2. **Answer the following in about 50 words:**

(a) What are Conventional Signs? Draw conventional signs for Temple, Railway line and Post office.

(b) Define Bearing?

(c) What is relief and contour?

(d) Define Grid Convergence?

Q3. **Answer the following in about 75 words:**

(a) What is magnetic variation?

(b) Differentiate between these:

(i) Relief and Slope.

(ii) Contour and gradient.

(iii) Horizontal Equivalent and vertical Interval.

(c) When a map is said to be set. How can a map be set?

Q4. **Answer the following in about 150 words:**

(a) Define Map. Briefly explain all types of maps.

(b) What is the method or rules of calculating a Grid Reference?

(c) Write a note on Service Protractor.

Q5. **Answer the following in about 250 words:**

(a) Explain cardinal points?

(b) Define bearing and write the types of bearing?

(c) Explain back bearing and give out the method for the conversion of bearing?

(d) Explain the various methods of finding own position.

Q6. **Answer the following in about 300 words:**

(a) How do you march without a map?

(b) Draw the diagram of a night march chart?

UNIT 3 : FIELD CRAFT /BATTLE CRAFT

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UNIT 3: FIELD CRAFT/BATTLE CRAFT

Knowledge	Understanding	Application Skill	Evaluation
Introduction to Field Craft and Battle Craft	The cadet will understand the various ingredients of Field Craft and Battle Craft.	The cadet will understand the use of ground and the weapon available to him to the best of one's own advantage.	Activities, work sheets, assignments, and mock exercises
Judging Distance	The cadet will understand the various methods to judge distance in different conditions.	The cadet will be able to engage a target by correct judging of distance.	Activities, work sheets, assignments, and mock exercises
Description of Ground	The cadet will understand the various types of ground and the procedure to describe them.	The cadet will be able to grasp a quick, accurate and standard procedure to describe an area to his men to understand it correctly.	Activities, work sheets and assignments,
Recognition, description and indication of landmarks and targets	The cadet will understand the methods of indicating the targets.	The cadet will be able to identify, describe and indicate the target accurately.	Activities, work sheets, assignments, and mock exercises
Observation, Camouflage and Concealment	The cadets will understand the importance of observation, camouflage & concealment	The cadets will be able to observe the surroundings in a better way.	Activities, work sheets, practical assignments.
Field Signals	The cadet will understand various signals to convey messages in the army	The cadet will be able to apply these signals in their day to day functioning.	Activities, work sheets, assignments, and mock exercises.
Section Formations	The cadet will understand the various section formations	The cadet will be able to apply the section formations in their exercises and practice	Activities, work sheets, assignments, and mock exercises.
Fire Control Orders	The cadet will understand importance of fire discipline and giving of fire control orders.	The cadet will be able to apply Fire control Order during their practice	Activities, work sheets, assignments, and mock exercises
Fire and Movement	The cadet will understand basic infantry fire & movement tactics.	The cadet will able to apply knowledge during survival technique	Activities, work sheets, assignments, and mock exercises
Knots and lashings	To understand various knots and lashings used in soldiering.	To apply knowledge during survival techniques.	Activities, mock exercises, practice.

CHAPTER - I

INTRODUCTION TO FIELD CRAFT AND BATTLE CRAFT

Introduction

Field Craft is an important aspect of military training. It is the art of using the ground and the weapon to the best of one's own advantage.

Field Craft

Field Craft includes the following subjects:-

(a) Visual Training.

(b) Recognition and description of targets.

(c) Personal camouflage and concealment.

(d) Judging distance.

(e) Movement with and without arms.

(f) Fire discipline and control.

Battle Craft

Battle craft is nothing but set of drills which are essential for conduct of successful operations in the battle field. These battle drills are very useful in tackling minor tactical problems. They save time, ensure rapid action and avoid confusion. Knowledge of field signals and section and platoon formations, however, is essential in the execution of various battle drills. Battle Craft includes the following subjects:-

(a) Field Signals.

(b) Section Formations.

(c) Fire control orders.

(d) Fire and move.

(e) Section battle drills.

Conclusion

It is important for NCC cadets to know about the basics of battle craft. The art of using the ground and the weapon, not only is as essential skill for a trained soldier, it also helps an individual to perform better in various life situations.

CHAPTER - II

JUDGING DISTANCE

Introduction

An individual should be able to judge distance accurately with his eyes so that the individual can decide on the following:-

(a) Know when to open fire.

(b) Know which weapon to be used.

(c) Can indicate targets to other men in his section

(d) Pass back accurate information when acting as an observer.

Methods Of Judging Distance

Methods of Judging Distance. There are six methods of Judging Distance. These are as under:-

(a) Unit of measure.

(b) Appearance method.

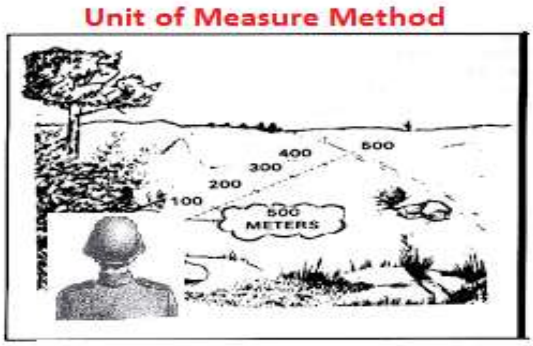
(c) Section average.

(d) Key range.

(e) Halving.

(f) Bracketing.

Unit of Measure



100m to 500m unit-of-measure method.

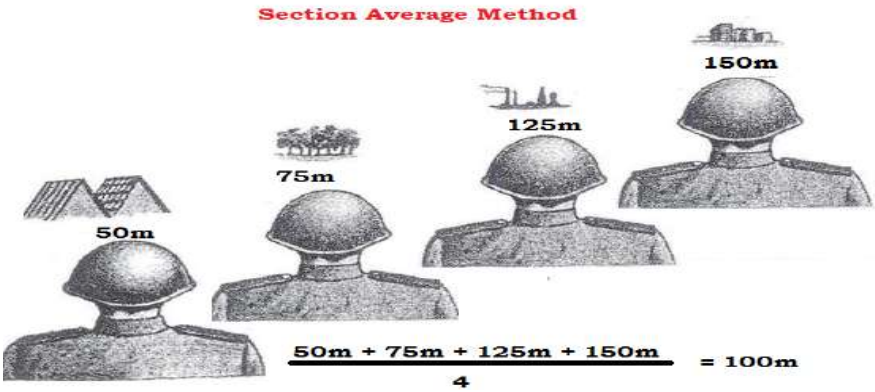
This method is also termed as the 100 yards method. The unit of measure chosen is normally 100 yards and therefore one should form a good idea of 100 yards distance on the ground. The length of a hockey field is the best yard stick for this purpose. The distance of a given object will be a multiple of the imaginary unit of 100 yards, as placed between the observer and the object.

Appearance Method

The distance can be judged by noting the detailed appearance of man at various ranges.

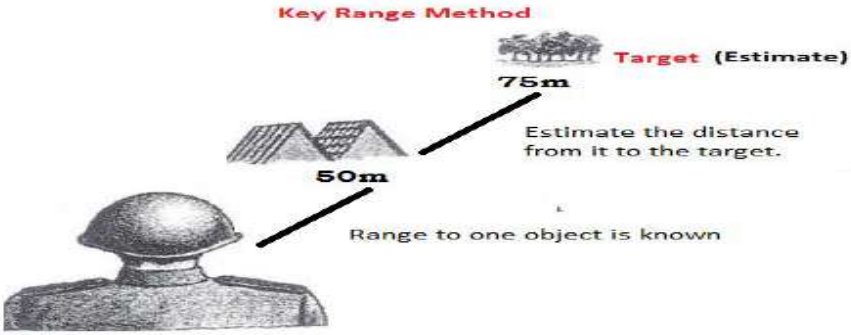
Section Average

Each man in the section is asked to judge the distance of a given object. The average of the answers given by the whole section is then accepted as the distance.



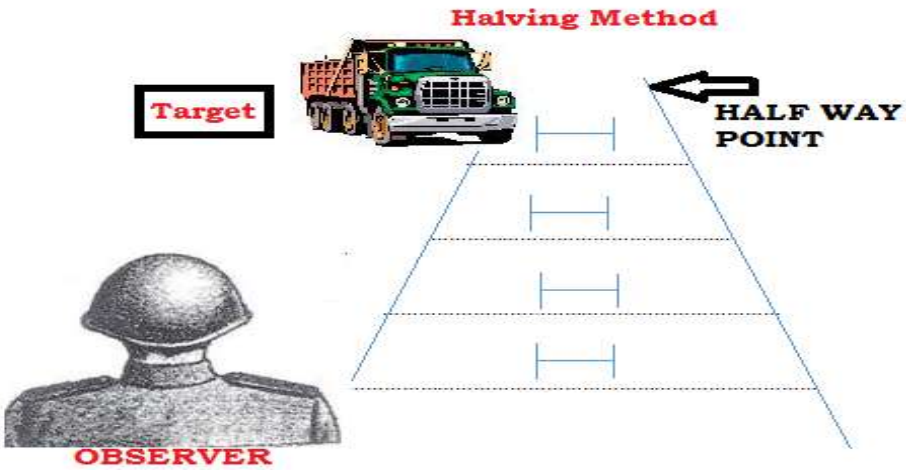
Key Range

If the range of the certain object is known, distance to other objects can be found in relation to the known range. This method is called “Key Range” method



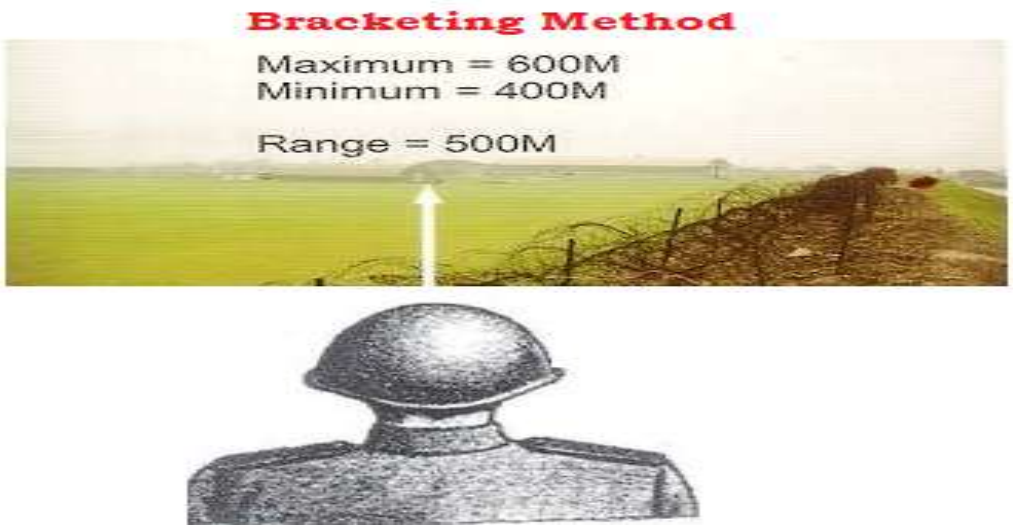
Halving

7. An object is selected half way between the observer and the target, the distance to the selected object is judged and doubled to get the distance to the target.



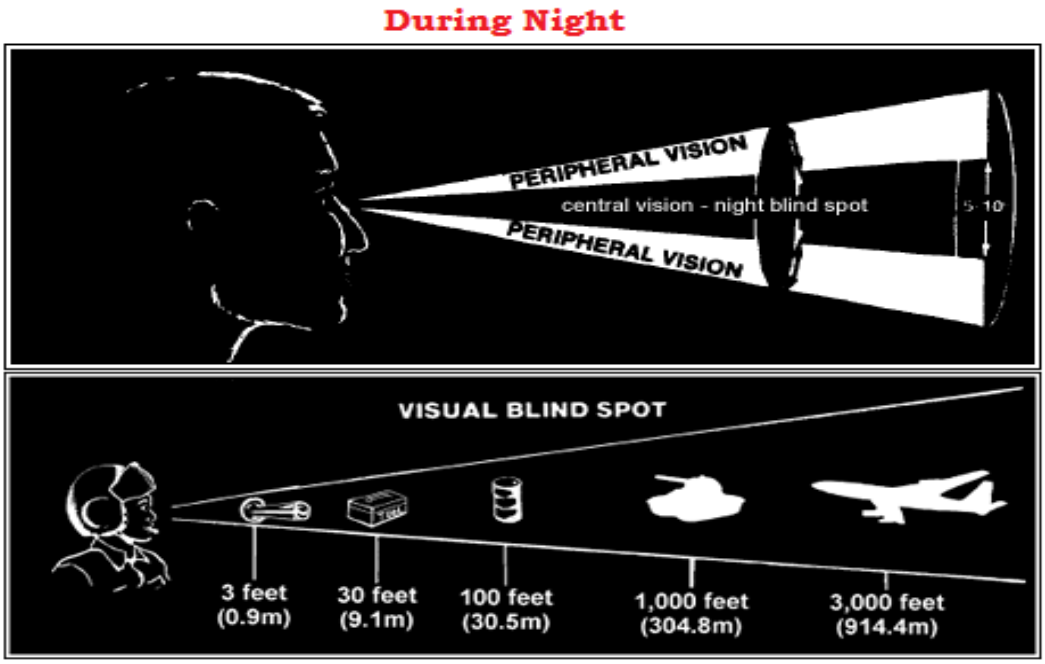
Bracketing

The observer works out the maximum and the minimum possible distances of the object and then accepts the mean as the distance.



Practical Hints

During Night. Judging distance at night will depend upon the visibility. The only suitable method is the "Key Range". Therefore mark prominent objects and work out their distances while there is still day light.



During Day

Conditions which mislead the observer when judging distances are as follows:-

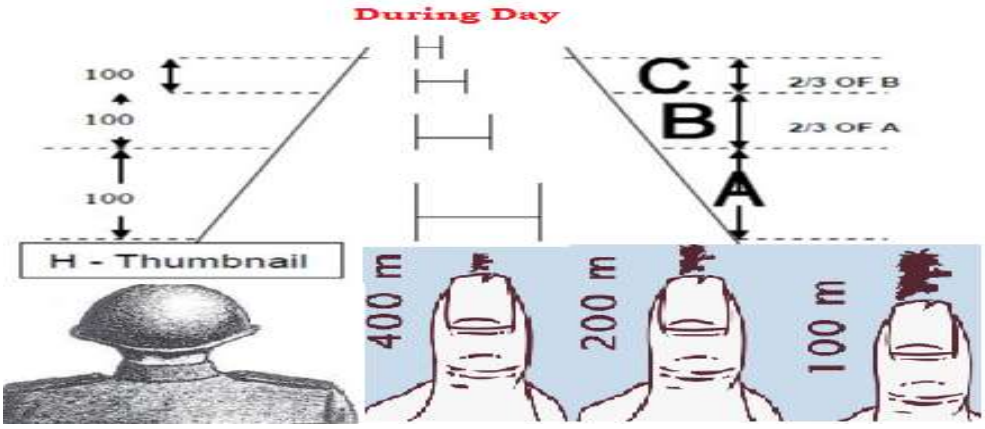
(a) Distances are overestimated when:-

- (i) Light is bad.
- (ii) The sun is in the observer's eye.
- (iii) The object is small in relation to its surroundings.

(iv) Looking through a valley of narrow lane e.g. street.
(v) Lying down.

(b) Distances are underestimated when:-

(i) The light is bright or the sun is shining from behind the observer.
(ii) The object is large in relation to its surrounding.
(iii) There is some dead ground between observer and the object.
(iv) Looking uphill.



Conclusion

Judging distance is very important to know how to indicate the landmarks in minimum time frame.It is also necessary to bring down effective fire on enemy by indicating the target using the techniques of judging distance. Hence all cadets should be able to know all methods of judging distance accurately.

CHAPTER - II

DESCRIPTION OF GROUND

Introduction

A quick, accurate and standard procedure is necessary to enable a commander to describe an area to his men and the men to understand it correctly.

Types Of Ground

Ser No	Types of Ground	Samples
(a)	**Broken Ground** It is uneven and is generally scattered with nullahs, bump sand fields in the ground. It is suitable for move of infantry.	
(b)	**Flat and Open Ground** It is even ground with little cover e.g. bushes, hedges and other foilage. It is not suitable for move of Infantry by day.	
(c)	**High Ground** Ground far above the general level of the area e.g. hill. It facilitates control of area around it by observation or fire.	
(d)	**Dead Ground** Ground that is hidden from an observer's view. It cannot be covered by flat path weapons.	

(a) Though an open ground is easy to travel, it is dangerous to do so in the locality of the enemy. Whether moving or taking fire position in an open area one is exposed to enemy from view and fire.

(b) Broken ground when correctly used affords protection from flat path weapons. It does not afford cover from air or protection from high path weapons.

(c) Dead ground does not afford cover from high path weapons.

Procedure Of Description

The normal method of scanning and describing ground is by dividing it as follows:-

(a) Fore Ground up to 300 yards

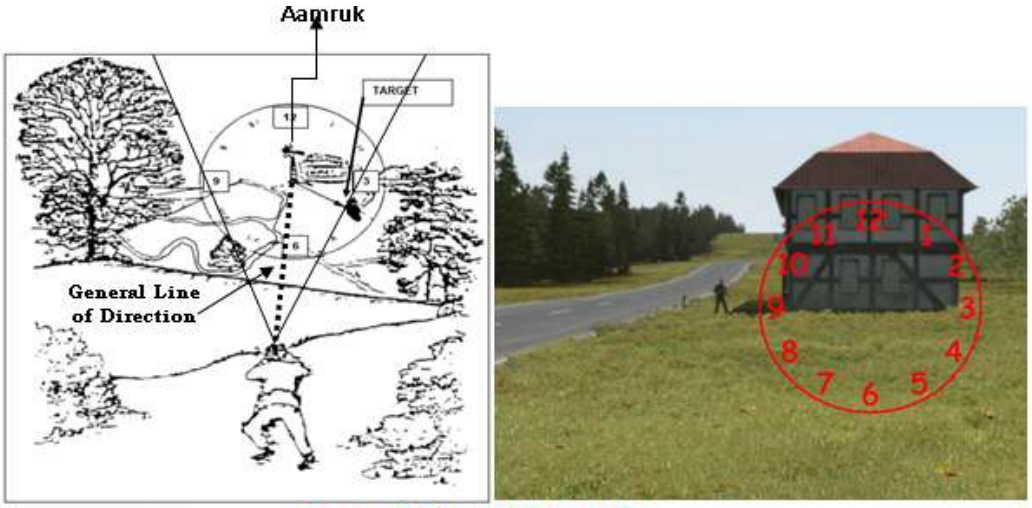
(b) Middle Distance from 300 yards to 500 yards

(c) Distance beyond 500 yards

Indication Of Landmarks Using General Line Of Direction And Boundaries

General Line of Direction

Start by giving the general line of direction by pointing out a centrally located, if possible, prominent land mark, e.g. No 1 section 500, RED HOUSE, class Red House and line beyond General Line of Direction (GLD).



General Line of Direction

Boundaries

After giving general line of direction give LEFT and RIGHT boundaries of your area. Divide the ground into foreground, middle and distance. Having done so start from LEFT to RIGHT systematically in a clockwise direction and describe the ground.

Sequence of description

While describing the ground bounded by particular arc after giving the boundaries start from LEFT to RIGHT. If the ground all around is to be described, start after general line of direction to the right and finish at general line of direction by completing the indication all around.

Conclusion

Studying and appreciating the ground is an important factor for getting success in operations. A cadet should have an eye for the ground. He should keep on observing and judging the ground even while advancing and section commander should keep on explaining continuously while on move.

CHAPTER - IV

RECOGNITION, DESCRIPTION & INDICATION OF LANDMARKS AND TARGETS

Introduction

Landmarks and other objects on the ground or a battle field may be either unclear due to climatic conditions or other reasons. Every effort should, therefore be made to indicate their location and size carefully and accurately. To ensure quick and accurate indication by commanders and recognition by individual soldiers a standard procedure has been laid down in the Army.

Definitions

Landmarks

An object, which is important on the ground and which is used in verbal orders to explain the ground in front.

Target

It is an object having a technical significance which is indicated with a view to bring down fire on it.

Reference Point

An important and unmistakable object, with the help of which you can indicate other land marks or targets. A reference point should be specific.

Methods Of Indication Of Easy Targets

Easy Targets

Can be indicated by the following methods:-

(a) **Indication by Description**. A noticeable target can often be described directly. For example “No. 1 Section BRIDGE”. Here BRIDGE is so noticeable that nobody can make a mistake in recognizing it.

(b) **Indication by Direction or Range or Both**. Inslightly less obvious cases other aids should be used e.g. direction or range or both. An example of each is given below:-

(i) Indication by Direction :No 1 Section BAEN BAGHICHA.

(ii) Indication by Range :No 1 Section 600 BAGHICHA.

(iii) Direction and Range :When indicating a landmark, indicate direction first and then range e.g. BAEN-600, BAGHICHA.

Methods Of Indication Of Difficult Targets

The targets which cannot be indicated by the methods given above are termed difficult targets. The methods to indicate these are explained below:

The Direction Method

This is used to indicate the following:-

(a) The general line of direction

(b) A known reference point

(c) Another landmark

Unless otherwise stated all directions are taken to be with reference to the general line of direction. The following direction will be used:-

Direction	**Measuring**
Slight Left/Right	Approximately 10 degrees
Quarter Left/Right	Approximately 22 ½ degrees
Half Left/Right	Approximately 45 degrees
Three Quarter Left/Right	Approximately 67 ½degrees
Full Left/Right	Approximately 90 degrees

Conclusion

To achieve success in war it is very important that the target is understood and recognized by the troops. By using the methods of indicating the target the cadets can easily indicate and identify the target.

CHAPTER – V

OBSERVATION, CAMOUFLAGE AND CONCEALMENT

Introduction

To observe is to penetrate the concealment done by the enemy. The term camouflage comes from French word "Camoufler" meaning "to blind or veil". It means to disguise an object in plain sight in order to conceal it from something or someone. The object loses its three dimensional qualities and appears flat. Camouflage is defined as action of misleading enemy by concealing or misrepresenting the identity of own troops, equipment, installations and activities.

Why Things Are Seen

Various factors responsible for things to be seen are as follows:-

(a) Shape
(b) Shine
(c) Shadow
(d) Surface
(e) Spacing
(f) Smoke
(g) Sound
(h) Movement

You have seen as to why things are visible during day or in clear moonlit night. Now let us see why things are visible at night. There are two factors which are given below:-

(a) Sound

(b) Light

Personal Camouflage

Camouflage means to disguise an object in plain sight in order to conceal it from something or someone.

We will now see how personal camouflage is done which includes camouflage of equipment worn or carried by a soldier.

(a) Use of Disruptive Pattern Clothing and Local Vegetation

(b) Camouflage of Face

(c) Camouflage of Equipment:

Equipment is camouflaged as follows:-

(i) **Helmet**

- Use of Hessian Cloth
- Use of Camouflage Net

(ii) **Camouflage of Back Packs**. Packs have square outline which is broken by tying thin ropes on the packs and branches of local vegetation are stuck in the ropes.

(iii) **Camouflage of Rifle**. Metal parts of rifles are phosphated and hence shine is reduced. Garnish of suitable colour should be wrapped over wooden parts/ plastic parts to contrast with surroundings.

(iv) **Camouflage of LMG**. Wooden/plastic parts of the LMG should be covered by garnish. LMG trench is camouflaged by use of a net.

(v) **Camouflage of Equipment**.
Equipment like binocular, map case, Radio Set should also be camouflaged by breaking its outline and preventing shine.

Concealment

If the enemy can see you, he can hit you with his fire. So you must be concealed from enemy observation and have cover from enemy fire. When the terrain does not provide natural cover and concealment, you must prepare your cover and use natural and man-made materials to camouflage/ conceal yourself, your equipment, and your position.

Types Of Cover And Correct Use Of Cover

There are two types of cover. They are:-

(a) Cover from view.

(b) Cover from fire.

Cover **from View.** A person is concealed only from view and not from fire.

Cover from Fire. This means that the concealed person is protected both from view and fire of weapon.

Look Through or Around Cover. Whenever possible look through or around the cover but not over it.

Avoid Breaking a Straight Line. Skyline/light coloured background is the worst background as the object against it will be found out because of contrasting background and shape.

Isolated Cover is Dangerous. Eye catches isolated cover easily especially if there is any movement near it.

Conclusion

To conclude, the importance of camouflage and concealment can be realized from the following:-

(a) In earlier days it was said "If it can be seen, it can be hit, if it can be hit it can be killed".

(a) But now in the modern warfare "If it can be seen it will be killed".

(b) Therefore, camouflage needs greater emphasis and the art of camouflage and concealment reduces the different varieties of soldiers into two main categories viz, "The good and the dead." Concealment is an aid to tactical deception and misinforms the enemy as to our intentions and strengths

CHAPTER - VI

FIELD SIGNALS

Introduction

Whenever someone wants to convey his message one has to raise his voice. In olden days smoke, sound of drum was the mode to convey messages from one village to another. In Army, different methods are used to convey messages. Today, you will learn one of these methods called Field Signals.

Signals With Hand & Weapons

Signals with Hand

Ser No	Name Of Signal	Signals With Hand	Illustrations
(a)	Deploy	Right arm fully extended above head and waved from side to side, palm open.	
(b)	Advance	Right arm swung from rear to front in “under arm blowing” fashion.	
(c)	Halt	Right arm raised to full extent above head.	
(d)	Turn About	Right arm raised and bent above head.	

(e)	Change Direction	Right arm raised to front in line with shoulder. Body then turned in required direction.	
(f)	Close	Right hand place on top of head, elbow to the right.	
(g)	Follow me	Right arm swung from rear to front above the shoulder in “over arm bowling” fashion.	
(h)	Enemy Approaching	Both hands open, palm inwards at waist level, with inwards scooping motion.	
(i)	Enemy LMG firing	Right hand thumb down signal.	

(j)	Attack	Punching motion with Right or Left hand according to direction of attack.	
(k)	Closed to Rendezvous	Close sign followed by both hands clasped in front of body at waist level.	
(l)	Infantry obstacle ahead	Both hands crossed in front of body at the waist, palm open downwards.	

Signals with Weapons

Ser	Name Of Signal	Signals with Weapons	Illustrations
(a	Enemy in Sight	Rifle held above the head parallel to the small number muzzle in the direction of the enemy.	
(b	Enemy in Sight in large number	As per (a) above, but arm moved up and several times.	
(c	Advance	Both arms raised to form the letter U	

Signals with Whistle

Ser	Name Of Signal	Signals With Hand
(a)	Cautionary Blast	A short blast to draw attention to a signal or order about to be given.
(b)	The Alarm Blast	A succession of alternate long and short whistle blasts.
(c)	Enemy Aircraft	A succession of short blasts.
(d)	Enemy Aircraft departed	Two long blasts repeated at interval of five seconds.

Field Signals As Means Of Giving Orders

Field signals are alternate means of giving orders and to control troops when voice control is not possible. Control over troops deployed can be done better by field signals than by voice control. There are various occasions when voice control is not possible. They are:-

(a) Battle noises.
(b) Need for silence.
(c) Intervening distances are too large.

Battle Noises

In war, due to firing and vehicle movement very high noise will be produced, so it may not be possible for a Commander to give voice message.

Need for Silence

There are certain operations which, by design are carried out in utmost silence, eg:-

(a) Ambush
(b) Patrolling
(c) Raid
(d) Cordon

Intervening Distances are Too Large

When Infantry takes the battle field they come across many obstacles in ground such as the ditch, rivers, mountains. Under such circumstances we will have the only choice left with us is field signals for communication.

Methods To Attract Attention Of Troops

Before any field signal is executed, the commander has to attract the attention of troops. Methods to attract attention of troops are :-

(a) A Short Blast of Whistle
(b) A Bird Call
(c) Whistle by Mouth
(d) Clicks(By using tongue)
(e) Clicks by Fingers

Other Methods Of Communication

Besides field signals there are various other means of communication in the Army which are as follows:-

(a) Dispatch Runners

(b) Dispatch Rider

(c) Radio Sets

Field Signals By Day

Some of the visual signals used during the day are flags and mercury coated mirrors. Flags are very effectively used by Navy on board a ship.

(a) Flags: (Red, Green and White flags)
(b) Mercury coated mirrors
(c) Smoke
(d) Miscellaneous: Various signals can be improvised and pre-arranged as under:-

(i) Clothes superficially hung out to dry.
(ii) Hurricane lamp, kept in the window.
(iii) Flashing of torch is used as Morse Code.
(iv) Applying various colours/signs on forehead and arms.

Field Signals By Night

Some of the field signals that can be used at night are:-

(a) Pre decided signals on a walkie talkie.
(b) Click by fingers.
(c) Clicks by using tongue.
(d) Whistle by the mouth.
(e) Use of rope.
(f) Use of colour light.
(g) Use of blacked out torch.
(h) Firing of weapon.

Note: Remember to use the simplest method that will achieve your aim.

Conclusion

The fighting efficiency of a unit/sub unit depends on sound communication system which helps commanders at all levels to exercise command and control effectively. Every commander must influence the battle by his personal touch which is achieved by good signal communications. Field signals become a part of movement of a good section/platoon commander. At section/platoon level, the commander directly influences the battle by the use of field signals. Victory in battle will come to that section/platoon whose men are familiar in the use of field signals.

CHAPTER-VII

SECTION FORMATIONS

Introduction

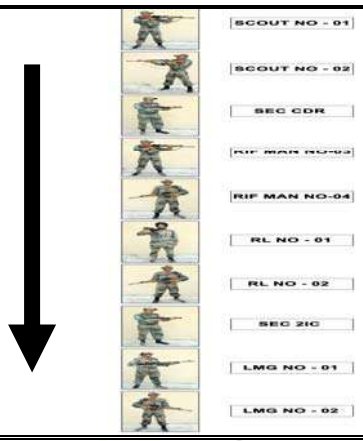
3. Various formations are used when troops come in contact with the enemy and the type of formation adopted is entirely dependent on the following four basic factors:-

(a) Degree of control required to be exercised by the Section Commander
(b) Type of ground.
(c) Necessity of bringing down maximum fire with minimum delay.
(d) Task.

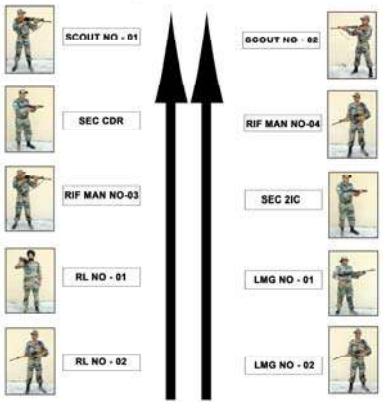
Section Formation

A Section is the smallest sub unit of an Infantry Battalion and is capable of undertaking independent task. It consists of ten persons who are organized in Rifle group and Support Group. Different types of formations adopted by a section are as under:

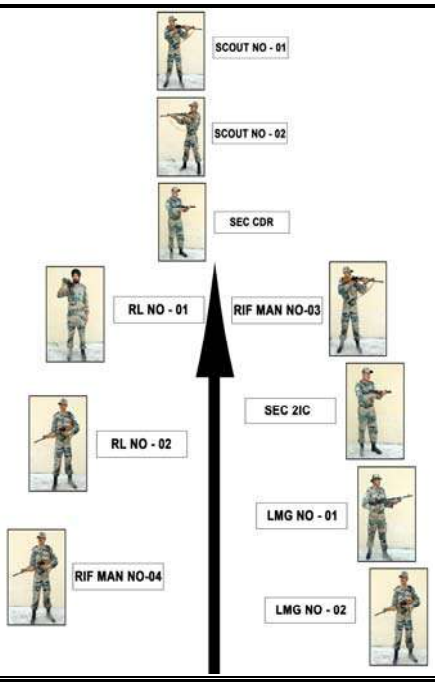
Single File Formation



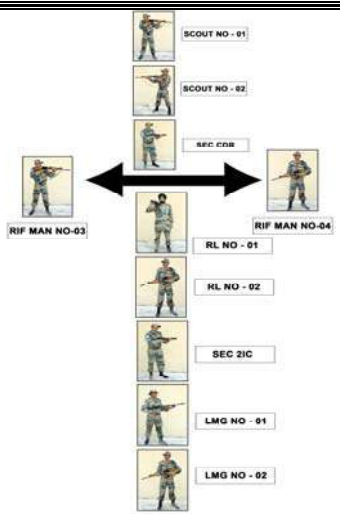
File Formation



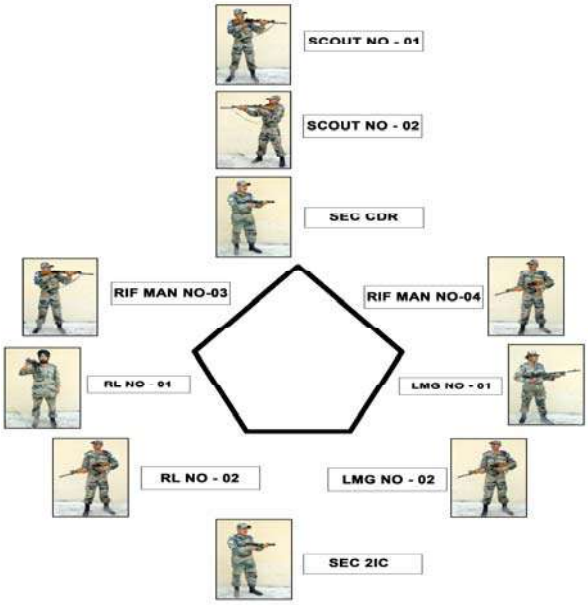
Arrow Head Formation



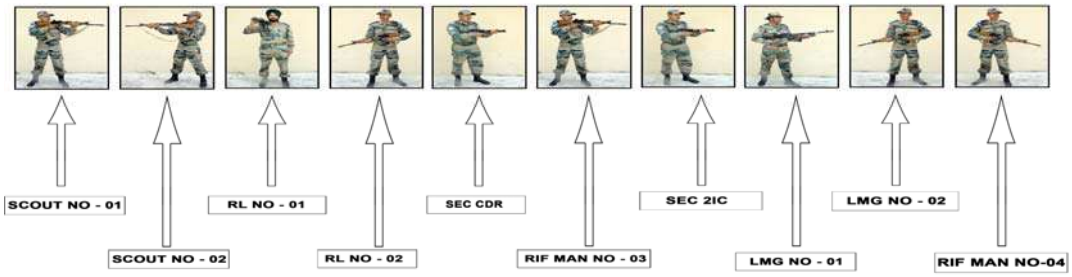
pear Head Formation



Diamond Formation



Extended Line Formation



Scout

Now you have seen section formation, a word about the scouts. Scouts are the eyes and ears of the section. Scouts always work in pairs. They work ahead of the leading section and advance from bound to bound. As scouts, one must always be alert.

Conclusion

You have so far learnt the organisation of a section and the various formations adopted by a section in battle. Remember, a section is organised into the Rifle Group and Fire Support Group to facilitate fire and move, the basic of all tactics.As for the section formations, each formation has its peculiar advantages and disadvantages. Remember, need for command and control and the necessity of developing the maximum fire quickly, will determine the formation you as a section commander must adopt.

CHAPTER - VIII
FIRE CONTROL ORDERS

Introduction

By opening of fire indiscriminately, too early or at too great a range, the defender's position will be disclosed prematurely which will mean wasting of ammunition without advantage. This means Section Commander should be able to control the fire of his section by exercising good fire discipline.

It is the duty of the commander to ensure that the enemy is engaged effectively by bringing down the correct volume of fire at the most effective range by using the most appropriate weapon(s). Also in the battle, all personnel of a section/platoon may not be able to observe the enemy and even if they can, they may either not open fire thinking that others would do so or all of them may open fire resulting in wastage of ammunition.

3. It is also the duty of a commander to assess the effect of fire on the en and then either stop the fire, or re-adjust it or add the fire of additional weapons to make it effective. Therefore the commander ensures effective of fire and expenditure of ammunition.

Importance Of Fire Discipline And Fire Control Orders

Fire discipline is a battle winning factor which will stand you in good stead, especially in situations where surprise is of paramount importance. Indisciplined firing starts with an individual and spreads like wild fire. Should the troops have confidence of correct, accurate and effective fire orders, they may not indulge in opening of premature/indiscriminate firing, thereby giving away position or wasting ammunition. Fire discipline and fire control orders are very important in all operations of war.

Defence. In defence, if fire is opened up prematurely, it will give away the defender's location allowing the enemy to change his plan and surprise the defender subsequently. Moreover, fire opened up at long ranges, is rarely effective and results in leaving the defender with less ammunition for the eventual attack by the enemy. Therefore good fire discipline and correct fire orders, assumes added significance in the following cases:-

(a) During hours of poor visibility/darkness when men are jittery and tend to fire at imaginary targets.

(b) When enemy patrols try to draw fire from the defender in order to find his disposition.

Important Terms, Points To Remember &Method Of Giving The Orders

Important Terms

Certain terms connected with fire control orders are:-

(a) **Fire Unit.** Any number of men firing under a commander, usually a section. The personal responsibility for giving them the executive order to fire is the fire unit commander.

(b) **Fire Direction Orders.** These are the orders which the fire unit commander receives from his superior, telling him when, at what target, and with what intensity to open fire. A section commander will receive fire direction orders from his Platoon commander. They may include key ranges and any specific direction about withholding of fire.

(c) **Fire Control Orders**. These are the orders given by the fire unit commander to direct and cont the fire of his fire unit. Emphasis should be on control and surprise. These orders are the final and complete instructions after all factors have been considered and before fire is actually opened.

(d) **Arc of Fire.** This denotes the area of ground for which the fire unit is responsible and within which it will engage targets. An arc of fire must not be confused with a field of fire, which is the area over which it can fire effectively.

Points for Section Commander

10. There are certain factors which must be remembered before giving fire control orders.

(a) **Indication.** No fire order can be effective unless the target is clearly indicated and can be easily recognised by the men of the fire unit.

(b) **Range.** Do the range, visibility and vulnerability of the target justify fire at all? Would it be better to wait and get a more vulnerable target or achieve more/complete surprise?

(c) **Best Weapons to Use.**What is the best weapon or weapons to use? Although the LMG is the main weapon of the section, the target may be more suitable for rifle fire only or possibly for a combination of weapons, eg a LMG and rifle grenade.

(d) **Rate of Fire**. Should the fire be in single round or in bursts? Should it be rapid orat the normal rate? Rapid rate is justified only on a few occasions, when it allows the max effect to be gained from surprise and volume of fire or when an especially vulnerable target presents itself or to cover move of troops in the final stages of an assault.

Method of Giving the Orders

Having decided to open fire, there is then the need to give orders.

The four main rules which must be adhered to are: -

(a) The orders should be given clearly, calmly and concisely.

(b) It should be given loudly so as to be heard above the noises of the battle.

(c) It must be given as an order, to be obeyed as such.

(d) It should be given with adequate pauses, so that those being addressed may have the time to take the correct action. For example there must be time for sight adjustment after the range is given.

Sequence Of Fire Control Orders

Sequence of Fire Control Orders

Fire control orders must be given in the laid down sequence so as to avoid confusion and misunderstanding. For ease of remembering the sequence for giving fire control orders, remember the catch word `GRIT'.

(a) **G** -The Group of the section which is addressed, i.e the LMG group, the rifle group or the whole section. An order starting 'No 1 Section indicates that the whole section will fire, `LMG Group' or 'Rifle Group' means that group only is to fire.

(b) **R** -The range to the target should be given next. It is to ensure accuracy of fire and to draw attention on a limited area of ground (Instructor to explain why range has to be given before indicating the target).

(c) **I** - The indication of the target by the simplest form of indication.

(d) **T** - The type of fire to be emp. i.e open fire at once, or on further orders, or when the opportunity arises.

Types Of Fire Control Orders

Types of Fire Control Orders

There are four types of fire control orders as under :-

(a) **Delayed Fire Control Orders**. These orders are given as an early warning when enemy is seen approaching at a longer range so that necessary preparations are made by the troops to open fire, as soon as the enemy appears within the effective range of weapons. Delayed fire control orders are executed in two manners:-

(i) When the initiative to open fire is left to the man eg:-

"No 1 Sec - 800 - JUNGLE se dushman ka ek sec adv kar raha hai. Jab mar ke ilake men aye to FIRE".

(ii) When initiative to open fire is with fire unit commander. Eg

“No 1 Sec - 800 - JUNGLE se dushman ka ek sec adv kar raha hai– mere agale hukam ka intizar karo".

(b) **Full Fire Control Orders.** As the name suggests these are orders complete in all respects. These fire control orders are given when fire is to be brought down immediately on a target within the effective range of weapons. There are two types of full fire control orders.

(i) **Distributed Area Target**. This is when the enemy presents itself over an area. e.g.

“No 1 Sec - 200 - JHARI - DAINE tin baje DARKHT –tak dushman ki position. LMG Group char burst, rifle group tin tin round FIRE”.

(ii) **Pin Point Target.** This is when enemy presents itself atone place only. e.g.

"Rif Gp 300 AkelaDarkhat, Darkhat ke niche dushman ka sniper, Rfn No 1 - tin round „FIRE".

(a) **Opportunity Fire Control Orders.** These orders are given when the target is not continuously seen by everyone in the section or when the enemy has taken cover, eg:-

"No 1 Sec 400 tuti futi zamin me dusman chhupa hua hai, nazar ane per FIRE".

(d) **Brief Fire Control Orders**. These are given when time is not available to give out a full fire order. In this only essential details are given. This type of order is normally given when enemy appears at close range and surprises us. eg

"LMG group sights down enemy running left to right - FIRE (Instructor to explain significance of the phrase sights down".

Conclusion

Fire Control Orders are necessary to achieve the following:-

(a) Maintain fire discipline

(b) Conserve and expend ammunition and use it judiciously and effectively.

(c) Not to disclose own position prematurely at long ranges, as chances of enemy escaping are more and they would have taken away information of your dispositions, which is not desirable.

(d) Engage targets with speed.

(e) Maintain surprise.

The correct sequence of Fire Control Orders must always be followed to avoid confusion. A soldier must exercise Fire discipline through fire control orders; however it does not imply that a soldier should never fire without orders. There will be many an occasions when the soldier must use his initiative and fire on the enemy. This applies in defence once the main attack has developed and need for concealing the position no longer exists. An enterprising rifleman can influence the course of the battle by picking on and killing enemy commanders and other key personnel such as radio operators.

CHAPTER IX

FIRE AND MOVEMENT

Introduction

The primary aim of infantry is to close in with the enemy & destroy him. The aim of getting close is achieved by making skilful use of ground. A clever enemy will however, deny you the use of such ground which you may need. When such a cover is denied by the enemy, we may have to movement in open.

Once we are forced to movement in open, a part of our force will have to fire on en position & force him to keep his head down. This would render the en incapable of bringing down aimed fire at us while we are on the movement. This process of keeping one element on the ground to give covering fire, while the other element is on movement, is called fire & movement. This is the basic tactics of all infantry and mechanised ops.

When To Use Fire And Movement Tactics

Fire & movement tactics may be used in following circumstances: -

(a) The enemy has opened SA fire which is effective.

(b) When own troops have seen the en first - within 400 to 700 meters.

(c) When the en is known or suspected to be in a certain area, then fire& movement tactics may be adopted when the troops reach within the effective range of en weapons/observation. (Instructor to explain as to what could be the effective range of enemies personal weapon)

(d) To cross obstacles by day or by night, e.g. nullahs/rivers.

Basic Considerations

There are five basic considerations for fire & movement. These are as under:-

(c) **No movement on exposed ground without covering fire.** The Advantages of covering fire are obvious, but this does not mean that fire will be brought down continuously when you are moving. Whenever you have ground providing you cover, you must use it. Whenever you have to move in open, fire must be brought down on the en in small bursts to keep his head down.

(b) **Control by the Commander**. The sec can remain a viable force only when it is under the control of its commander. Otherwise, it is likely that the required fire support will not be brought down at the required place & time. In a section, control is ex by voice command & hand signals. As a rule, sec commander must keep his section within range of voice or visible control.

(c) The angle of covering fire from direct firing weapons should be as wide as possible w/o loss of control or time. It is to ensure that own troops are not coming under effective fire of own fire sp. It also ensures that the fire support is provided till as late as possible so that assault troops are able to close in with the en.

(d) **Full use of Available Cover.** Full use should be made of cover provided by the ground. Various types of cover have already been taught to the cadets.

(e) **Optimum use of all Available Weapons.** All available weapons shouldbe used for producing covering fire.

Appreciation Of Ground And Cover

In battle, fire & movement is applied according to the type of ground over which we are operating. In open country, the problem is to find cover; in close country, there is difficulty in finding positions with good observation & field of fire. Skillful use of ground can help achieve surprise & save lives. It is therefore required to develop an eye for ground. Ground should be considered from the enemies' point of view & it should be appreciated for the following:-

(a) Fire positions.

(b) Observation positions.

(c) Cover from fire.

(d) Cover from view.

(e) Obstacles.

(Instructor to explain that while movement, sec commander & every member of the sec is responsible to continuously look for nearest cover which he may have to take once en opens effective fire. He is also responsible to appreciate various fire positions & types of cover being provided by that particular cover)

Types of Cover

Cover from view is often not cover from fire, especially if the movement has been seen by the enemy. Concealment from enemy air and ground observation is the chief means of gaining surprise. Some of the main types of cover are:-

(a) Undulating ground which is the least obvious form of cover; when skillfully used, it protects from direct fire and gives no ranging marks to the enemy.

(b) Sunken roads, beds of streams and ditches which give good cover from view and often from fire as well. However, the reis always a danger that the enemy may pay special attention to them; they may be mined or booby-trapped and precautions
Again stem bush must be taken. If the roads or ditches are straight, the enemy will be able to fire down the min enfilade.

(c) Hedges and bushes give cover from view but not from fire. In open country they may make Standing crops give cover from view but movement through them can generally be detected.

(d) Woods which give cover to men and vehicles from enemy air and ground observation. They give some protection from small arm fire but HE bombs and shells will explode in the branches of trees and will cause heavy casualties unless troops are dug in and have overhead protection.

(e) Buildings and walls afford concealment and protection from small arms. Fire and shell splinters. When isolated they make good ranging marks for the enemy.

Dead Ground

Ground which a soldier cannot see from his position is called dead ground. Platoon and section commanders should be able to recognize ground which is likely to be dead to the enemy. Ground can only be described as dead in relation to the position of an observer. Troops under cover or in dead ground are safe from enemy observed fire but not from indirect fire. These areas are always likely to be selected by the enemy as defensive fire tasks for his artillery and mortars. Dead ground is also safe from detection by battle field surveillance radars, by battle field surveillance radars, as these have line of sight limitations.

Common Mistakes

The wrong use of ground may lead to casualties and loss of surprise; some common mistakes are:-

(a) Carelessness by troops while making a reconnaissance, such as unfolding a map in the open or not using a covered approach to an Observation Post.

(b) Unnecessary movement in a position overlooked by the enemy.

(c) Using conspicuous landmarks such as isolated trees, bushes or cottages.

(d) Halting troops near road or track junctions or other mapped features which are always registered as targets by the enemy.

(e) Bad track discipline.

(f) Failure to guard against enemy air observation.

Maps and Air Photographs

Maps and air photographs should be used together to obtain the best picture of the ground. The two aids are complementary as is shown by listing the advantages and limitation of air photographs :-

(a) Advantage.

(i) Are more up-to-date.
(ii) Gives more detail.
(iii) Show the size and shape of features accurately.
(iv) Allow gradient to be seen in relief with a stereoscope.

(d) Limitations

(i) Complete geographical cover almost impossible.
(ii) Expensive to produce.
(iii) Scales vary.
(iv) Details of heights not given.

Only the topographical information given by air photographs needs to be understood. The interpretation of the details of enemy defences is the task of the experts. Very little time need be spent in mastering the theoretical knowledge of map reading but a great deal of practice is required. The use of the prismatic compass and the protractor must also be mastered by sub-unit commanders. Navigation is a science and never a guess. An officer must have complete trust in his compass; this only comes with practice.

Selection Of Fire Positions And Fire Control

The ideal fire position should:-

(a) Provide cover from fire.
(b) Provide cover from view.
(c) Afford a good view of the ground to be watched or target to be engaged.
(d) Provide room in which to use the weapon freely.
(e) Have a covered approach.
(f) Be easy to advance from.

The selection of fire positions require knowledge both of the characteristics of weapons and of the use of ground. A direct firing weapon must be sited with an eye at the level from which it is to fire. A target which is clear to a man standing may be invisible to one lying down.

Sometimes it may be necessary to site fire positions on trees, rooftops, haystacks or walls to produce fire effect. This may result in plunging fire, but this must be overcome by accurate shooting. Cunning concealed fire positions will puzzle the enemy, protect the troops from observed fire and safeguard them against air attack.

Fire Control

There is a big distinction between fire control in attack and in defence. In **attack** men should be allowed a great deal of latitude in opening fire. Speed and immediate fire effect is what is required. With a well concealed enemy it will often be necessary to “neutralise” an area by fire since few definite targets will be visible. In **defence**, the vital factor in fire control is that early opening of fire may give away positions to the enemy and jeopardize concealment. Normally, a section commander will lay down a line in front of his section post beyond which fire will not be opened without his orders. This is particularly important where a long field of fire is available. In any case fire will normally be opened on the orders of the section commander.

Movement

Movement in the face of the enemy should be covered by fire. This does not mean that it is impossible to move unless a heavy weight of fire is brought down on the enemy. An important part of an

attack is the movement towards the objective, supporting fire is one of the aids to that movement. A knowledge of how to move and how to use ground for movement is essential to enable troops to close with the enemy with minimum casualties, undetected in the zone of arc of battle field surveillance radars.

Usually, troops advancing by day in action will move at a brisk walking pace until they make contact; in the final stages of the assault, they will double. They may have to double or crawl at other times; for example if attacking troops move into enemy defensive fire, it is usually best to double forward and through it; to lie down is often dangerous as well as useless. Doubling and crawling are both tiring however, and should only be used in short spells in critical situations particularly for crossing open ground in full view of the enemy. The commander must himself decide on his pace from his personal knowledge of the state of fitness of his men. In general the aim must always be to keep movement determinedly towards the enemy at the best possible speed.

Conclusion

Fire & Move is the basic skill of an Infantry soldier. Its training provided to all the officers and jawans of the Army even if they are not in the Infantry. The basic aim is to enable one detachment of soldiers to move while the enemy is pinned down by the effective fire of the other temporarily static body of soldiers. It is the most effective and safest method to move during operations or when in contact with the enemy.

CHAPTER – X

KNOTS AND LASHINGS

Introduction

The ability to join two pieces of natural material together, and so increase their length, gives man the ability to make full use of many natural materials found locally. Knot tying is a useful exercise to obtain better coordination between eyes and fingers.

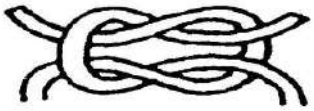
Tying Of Knots

A brief description of the use to which the knot may be put is given in this lesson. The diagrams will explain how the knot is tied. The letter "F" means the free or untied end of the rope, and the letter "S" means the standing or secured end.

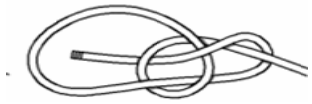
KNOTS FOR ROPE ENDS OR FOR GRIPS ON THIN ROPE

Ser No	Type of Knot	Sample
(a)	**Thumb Knot.** To make a stop on a rope end, to prevent the end from fraying or to stop the rope slipping through a sheave, etc.	
(b)	**Overhand Knot.** Over hand knot may be put to the same use as the thumb knot. It makes a better grip knot, and is easy to undo.	
(c)	**Figure Eight.** This knot is used as the thumb knot. It is easy to undo, and more ornamental.	

KNOTS FOR JOINING ROPES

Ser No	Type of Knot	Sample
(a)	**Reef Knot**. To securely jointwo ropes of equal thickness together. Notice the difference in position of the free and standing ends between this and the thief knot.	
(b)	**Thief Knot** To tie two ropes of equal thickness together so that they will appear to be tied with a reef knot, and will be retied with a true reef knot. This knot was often used by sailors to tie their sea chests, hence the name.	
(c)	**Fisherman's Knot**. For joining two springy materials together; suitable for wire, fishing gut or vines. Two thumb knots(one on each rope)pulled tight. The knots lock together.	

Knots to Make Loops in Rope

Ser No	Type of Knot	Sample
(a)	**Bowline**. To form a loop that will not slip on a rope end.	

Knots for Fastening Ropes

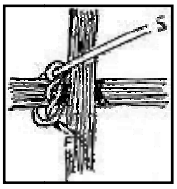
Ser No.	Type of Knot	Sample
(a)	**Clove Hitch**. For securing a rope to as par. This hitch, if pulled taut, will not slip up or down on a smooth surface. A useful start for lashings.	

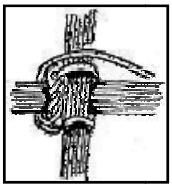
Lashings

The methods employed to tie with ropes, poles or any rope to a stationary object to securely hold it in place is known as lashing.

(a) **Square Lashing**. To join poles at right angles.

(b) **Frapping Turns**. These are turns that go round the lashing and pull it tight.





Conclusion

Knots and lashings are very useful and become very handy for cadets during camps. They can make use of knots for joining or tying 2 to 3 different ropes together and make use of it during rope climbing, rappelling, slithering and other such adventure activities. Similarly, lashings can be used for joining 2 or 3 things together to make a structure that can useful in camps. Therefore, it is very important for cadets to learn the various types of knots and lashings so as to implement them during camps and in day to day life.

Summary

- Field Craft is an aspect of military training which relates to the conduct of a soldier in face of the enemy. It's an art of using the ground and the weapon available to the best of one's own advantages.

- **Methods of Judging Distance**

  - Unit of Measure
  - Appearance Method
  - Section Average
  - Key Range
  - Halving
  - Bracketing

- **Types of Ground**

  - Broken Ground
  - Flat and Open Ground
  - High Ground
  - Dead Ground

- **Landmarks**.An object, which is prominent on the ground and which is used in verbal orders to explain the ground in front.

- **Target**. It is an object having a tactical significance which is indicated with a view to bring down fire on it.

- **Reference Point**.A prominent and unmistakable object, with the help ofwhich you can indicate other land marks or targets. A reference point should be specific.
- Things are seen due to
  - **Shape**
  - **Shine**
  - **Shadow**
  - **Spacing**
  - **Smoke**
  - **Sound**
  - **Movement**

- Camouflage measures include
  - **Use of Disruptive Pattern Clothing and Local Vegetation.**
  - **Camouflage of Face.**
  - **Camouflage of Equipment.**
  - **Helmet.**
  - **Use of Hessian Cloth.**
  - **Use of Camouflage Net.**
  - **Camouflage of Packs.**
  - **Camouflage of LMG**
  - **Camouflage of Rifle.**

- There are two types of cover. They are :-

  - Cover from Fire. This implies that the concealed person is protected both from view and fire of weapon.

  - Cover from View. In this type of cover, a person is concealed only from view or from being seen not from fire.

- Field Signals is one of the ways of passing of message with the help of Predetermined codes and signals.

- Signals with hand.
- Signals with Weapons.
- Signals with Whistle.

- Field signals are alternate means of giving orders and control troops when voice control is not possible like.

  - Battle Noises.
  - Need for silence.
  - Intervening distances are too large.

- The Field signals used during day are different form ones used at Night.

- Other Methods of Communication.

  - Radio
  - Dispatch Rider
  - Runners

- Basic Considerations for Fire and Movement
  - **No movement on exposed ground without covering fire.**
  - **Control by the commander.**
  - **The angle of covering fire from direct firing weapons should be as wide as possible w/o loss of control or time**
  - **Full use of available cover**
  - **Optimum use of all available weapons.**

- The ideal fire position should:-
  - **Provide cover from fire.**
  - **Provide cover from view.**
  - **Afford a good view of the ground to be watched or target to be engaged.**
  - **Provide room in which to use the weapon freely.**
  - **Have a covered approach.**
  - **Be easy to advance from.**

- The various section formations are :-
  - **Single file.**
  - **File.**
  - **Arrow Head.**
  - **Diamond.**
  - **Spear Head.**
  - **Extended Line**

- Knots: Ability to join two pieces of material/rope together. Important types of Knots are:-
  - **Thumb Knot.**
  - **Overhand Knot.**
  - **Figure Eight Knot.**
  - **Thief Knot**

- Lashing : the method employed to tie with ropes , poles,or any rope toa stationary object to securily hold it in place is known as lashing
  - **Square Lashing and Frapping Turns.**

Comprehension Questions

Q1. Answer the following in about 15 words:

(a) What are the methods of Judging distance?
(b) Name the different types of Ground.
(c) Write methods of indication of easy targets?
(d) Define camouflage.
(e) What are the two types of cover?
(f) Give out three methods of giving out field signals.
(g) What are the different methods of communication?
(h) Name the different types of Section Formation.
(j) Define Knots.
(k) Define Lashing.

Q.2. Answer the following in about 50 words:

(a) What is Key Range method of Judging distance?
(b) Explain the different types of Ground?
(c) What do you understand by Reference Point?
(d) Why are things seen?
(e) What are the field signals by Night?
(f) List the different types of Section Formations.
(g) What are the different kinds of knots to make a loop in Rope?

Q.3. Answer the following in about 100 words:

(a) Define Section Average method of Judging distance?
(b) What is the sequence of describing a Ground?
(c) What is the method for indicating difficult targets?
(d) Write various forms of personal camouflage.
(e) What do you mean by Square lashing?
(f) What is the need of Field Signals?
(g) Explain 3 Field Signals with the help of weapons.
(h) Compare Single file, File and Spear File Formations.
(j) What do you mean Fire Control Orders?

Q.4. Answer the following in about 150 words:

(a) Define Appearance method of Judging distance?
(b) What is the method of indicating easy targets ?
(c) Explain 5 Field signals given out with the help of hands.
(d) What do you understand by Cover from View and Cover from Fire?
(e) Discuss guidelines for correct use to Cover.
(f) When do you use fire and movement tactics ?
(g) Explain Diamond Formation.

Q.5. Answer the following in about 250 words:

(a) Define Unit of Measure method of Judging distance?
(b) What are the various factors responsible for things to be seen?
(c) Explain various field signals used by day and by night.
(d) Explain various section formations with an illustration.
(e) What do you mean by Knots and Lashing .Explain lashing in detail?

UNIT 4 : INTRODUCTION TO INFANTRY WEAPONS AND EQUIPMENT

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UNIT 4 : INTRODUCTION TO INFANTRY WEAPONS AND EQUIPMENTS

Knowledge	Understanding	Application Skill	Evaluation
Characteristics of 5.56 INSAS rifle, Ammunition, Firepower, Stripping, Assembling and Cleaning of 5.56mm INSAS rifle	The cadet will understand the length, weight, rate of fire and types of ammunition how to strip this Rifle assemble it and items and oil required cleaning the weapon.	The cadet will be able to take care, clean and keep this weapon in serviceable condition and use it when required.	Activities assignments, work sheets and handling practice.
Organisation of Infantry Battalion	The cadet will understand the basic organisation of an Infantry battalion.	The cadet will be aware of the basic organisation of an Infantry Battalion of Indian Army.	Activities, discussions, worksheets, assignments, mock exercises.
Characteristics of Company Support Weapons	The cadet will understand the characteristics of 7.62mm Dragunov Sniper Rifle, 7.62mm Medium Machine Gun, 30 mm Automatic Grenade Launcher and 84 mm Rocket Launcher.	The cadet will be familiar with these weapons.	Activities, work sheets, assignments, and mock exercises
Characteristics of Infantry Battalion Support Weapons	The cadet will understand about 81mm Mortar and Anti Tank Guided Missiles and will get practical experience of observing the weapons at hand.	The cadet will be familiar with these weapons.	Activities, work sheets, assignments, and mock exercises

CHAPTER – I

CHARACTERISTICS OF 5.56MM INSAS RIFLE, AMMUNITION, FIREPOWER, STRIPPING, ASSEMBLING AND CLEANING

Introduction

The 5.56mmINSAS Rifle is produced by the Indian Ordinance Factory Board and is being used by the Indian army. It is the personal service weapon of a soldier. It is lighter than the AK47 and easy to handle.

5.56 mm INSAS RIFLE

Characteristics, Ammunition And Fire Power

Calibre	-	5.56 mm
Length of Rifle without bayonet	-	960 mm
Length of Rifle with bayonet	-	1110 mm
Length of barrel	-	464 mm

Weight

(a) Fixed butt with empty magazine	-	3.6 kg
(b) Fixed butt with loaded magazine	-	3.69 kg
(c) Full magazine	-	90 gm
(d) Bayonet	-	305 gm
Effective range	-	400 m
Sight Radius	-	470 mm
Principle of Operation	-	Gas Operated
Penetration	-	3 mm at 700m
Mode of fire	-	Single Shot and Three Round Burst
Rate of Fire		
(a) Normal	-	60 rounds/min
(b) TRB (Three Round Burst)	-	90 rounds/min
(c) Intense	-	150 rounds/min
(d) Cyclic	-	600 to 650 rounds/min

Type of Ammunition.

(a) Ball Round.

(b) Tracer Round.

(c) Blank Round.

(d) High Density (HD) Cartridge.

Stripping

5.56mm INSAS rifle is the personnel weapon of a soldier. It is responsibility of the soldier to take care of his weapon. Stripping, assembling and cleaning of this weapon is very easy. If a soldier maintains the weapon properly, it will produce good result.

Removing Magazine

Hold the magazine with left hand and press them magazine catch to the front with thumb and then remove them again.

Stripping Assembly Cover

Cock the rifle and keep the change lever on 'S'. Press lever locking retainer with left hand and press the retainer to the front with right hand thumb. When retainer moves to the front, it is free from locking retainer. Now lift the assembly opening cover and move to the front.

Stripping of Piston Extension Assembly

While pressing retainer make the recoil spring assembly free from the guide and move it out.

Stripping of Piston Extension Assembly

Hold rear portion of piston extension and while pressing it down ward, remove it from the rifle.

Stripping of Breech Block

Hold piston extension switch left hand, turning it upside down and with the right hand slide out the breech block from the recess.

Stripping of Firing Pin

Remove locking pin with the help of drift. Firing pin will come out.

Stripping of Extractor

Drift tool is used for stripping of the extractor. Press the extract or with the left hand thumb. Then press access pin with pointed portion of the drift. Access pin will come out. Now remove the extractor and spring from its recess.

Stripping of Gas Plug and Projector Sight

With the help of drift, remove the pin fixing gas plug and while pressing gas plug remove the gas block. Now the projector sight will also get removed.

Stripping of Hand Guard

The front edge of hand guard is in the cup near the gas block. Straighten the pin locking and remove it with the help of drift. Shifting the cup towards gas block, remove the hand guard.

Stripping of Magazine

While pressing retainer dimple remove bottom plate. Remove retainer spring and the platform.

Assembling

Assembling of the rifle is carried out in reverse sequence of stripping as under:-

(a) Assembling of magazine.

(b) Assembling of extractor and firing pin.

(c) Assembling of hand guard.

(d) Assembling of piston extension and breech block.

(e) To insert piston extension assembly in gas cylinder and bracket.

(f) To insert recoil spring assembly in piston extension.

(g) To insert piston extension assembly and recoil spring in body housing.

(h) To close cover assembly and loading of retainer

(i) Fix magazine.

Parts of 5.56 mm INSAS Rifle

Inspection after Assembling of Rifle:-

(a) Remove magazine.

(b) Move change lever to 'R'.

(c) Cock the rifle.

(d) Ensure piston extension has completely moved forward.

(e) Move change lever to 'S'.

(f) Try to press trigger, it will not get pressed.

Cleaning

Items required for cleaning are as under :-

(a) Brush cleaning bore.

(b) Pull through.

(c) Road cleaning barrel.

(d) Tool adjusting sight/rear sight.

(e) Tool removing repair case.

(f) Chindi.

(g) Drift.

Rifle parts to be oiled are as under:-

(a) Complete breach box less its face.

(b) Magazine Catch.

(c) Trigger mechanism.

(d) Rifle spring Assembly.

Rifle parts not to be oiled are as under:-

(a) Barrel.

(b) Cylinder.

(c) Gas plug.

(d) Piston extension assembly

(e) Magazine platform site.

Strip the rifle and clean its parts. Clean bore with pull through and chindi. Oil the bore and clean the cylinder gas. Clean cylinder with pull through and chindi. Gas affected parts like breech block, piston, extension and firing pin to be cleaned carefully so that gas fouling is completely removed. After cleaning, the parts should be oiled with a piece of cloth. Do not rub hard outer surface of the rifle with soaked oil.

Conclusion

The lesson about 5.56mm INSAS Rifle helps a cadet to understand the characteristics of the rifle. The knowledge of length, weight, types of ammunition used, the process of stripping, assembling and cleaning the rifle helps him if he joins the army in future.

CHAPTER - II

ORGANISATIONOF INFANTRY BATTALION

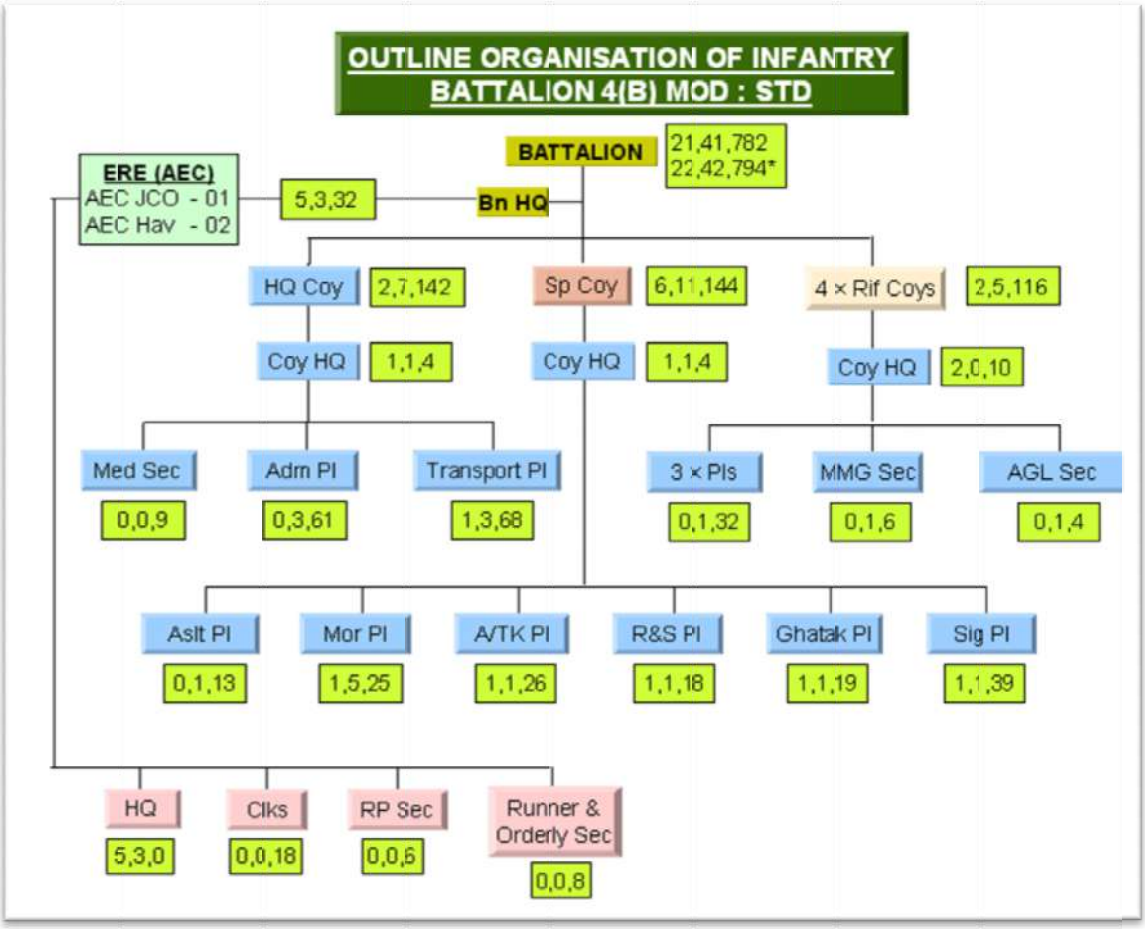
Introduction

The infantry battalion is the most important organisation of the army. It is trained and equipped to face any adverse situation. It can fight an enemy independently or as part of a larger force. It has the sustenance power and motivation to fight till the end.

Outline Organisationof Infantry Battalion

Capabilities

The capabilities of Infantry Battalion are as under:-



(a) **Self Reliance**. The Infantry is equipped, trained and organized to fight with the enemy without any outside support. It can fight itself for a long time.

(b) **Ability to Hold Ground**. The Infantry Battalion can hold ground effectively with or without outside support.

(c) **Adaptability**. An infantry battalion is highly adaptable and can operate over any type of ground, by day or by night and under any difficult climatic conditions. The infantry battalion can be readily shifted by land, sea or air to the battle field.

(d) **Mobility**. Infantry battalion has a high degree of mobility. It can go through almost all kinds of obstacles.

(e) **Vulnerability**. In battle, an infantry battalion becomes weak in front of tanks, artillery, small arms, air attack and anti-personnel mines. The infantry battalion over comes this weakness by careful sighting, hiding, spreading out, digging, skillful use of ground, making itself invisible by smoke, utilizing times of poor visibility and darkness and by neutralizing fire including smoke. An infantry battalion is capable of defending itself against tanks with its anti-tank weapons.

Employability

The basic role of infantry battalion is to close in with and destroy or capture the enemy and to hold ground. Fire and movement is the basis of infantry tactics. Infantry battalion from section up wards is based on this principle. Infantry battalion and its sub-units are trained to operate in the face of the enemy opposition without entirely depending on support from other arms, by skillful use of ground, weapons, and above all the infantrymen with their sheer courage, determination and valor. The basic personnel weapons in infantry battalion are pistols, carbines, rifles and bayonets. The fire power is greatly increased by supporting weapons. These are anti-tank guided missiles, 81mm mortars, light machine guns, medium machine guns, automatic grenade launchers, flame throwers, sniper rifles etc.

Anti-Personnel Mines used against Infantry

Conclusion

Infantry battalion is the basic and the most important organisation of the army. It is equipped, trained and motivated to fight a decisive battle. The mportance of an infantry battalion can be judged by the fact that no military operation can start or finish without the participation of infantry.

CHAPTER - III

CHARACTERISTICS OF COMPANY SUPPORT WEAPONS

Introduction

The company support weapons are 7.62mm Dragunov Sniper Rifle, 7.62mm Medium Machine Gun, 30 mm Medium Grenade Launcher and 84 mm Rocket Launcher. They are used both in defensive and offensive operations.

Types Of Infantry Company Support Weapons

Types of Infantry Company Support Weapons.

(a) 7.62 mm Dragunov Sniper Rifle.

(b) 7.62mm Medium Machine Gun.

(c) 30 mm Automatic Grenade Launcher.

(d) 84 mm Rocket Launcher.

Characteristics

7.62 mm Dragunov Sniper Rifle

(a) Caliber - 7.62mm

(b) Range - 800 Mtr

(c) Range with telescope sight - 1300 Mtr

(d) Weight - 4.3 Kg

(e) Magazine capacity - 10 Rounds

(f) Ammunition fired

- (i) Armor Piercing.
- (ii) Sniper Balls.
- (iii) Steel Core.
- (iv) Tracer
- (v) Incendiary

7.62 mm Medium Machine Gun.

(a) **Weight**

- (i) Gun - 14.2 Kg
- (ii) Tripod - 10.2Kg

(b) Effective Battle Range - 1800m

(c) Traverse - 360 degree

(d) No. of rounds in belt - 235 Rounds

(e) **Rate of Fire**.

(i)	Normal	-	100 rounds per min
(ii)	Rapid	-	200 rounds per min
(iii)	Cyclic	-	500-1000 rounds per min (Adjustable by setting of gas regulator)

(f) Length of Service Burst - 20 rounds

(g) Sustained Fire - Being air-cooled can maintain normal rate of fire indefinitely. However barrel should be changed after firing four belts.

(h) Beaten Zone.

	Range		Beaten Zone
(i)	560m	-	110m x 1m
(ii)	600m	-	100m x 1m
(iii)	1200m	-	65m x 3m
(iv)	1800m	-	50m x 4m

(j) Trajectory - When the sight is fixed up to 600m bullets do not rise above 1.2m (4 ft).

(k) Night Firing - It is possible to fire the gun at night using passive night sight.

30mm Automatic Grenade Launcher

(a) **Weight**

(i)	Launcher	-	18 kg
(ii)	Mount	-	12 kg
(iii)	Sight	-	1 kg (without case); 3.5 kg (with case)
(iv)	Gun Box	-	14.5 kg (with 29 grenades in one belt)
(v)	Sight with case	-	3.5 kg

AGL Grenade

30 mm Automatic Grenade Launcher

(b) **Range** - 800 to1700 m (With and without sight)

(c) **Rate of Fire**

(i) Normal - 50grenades/Min

(ii) Rapid - 100grenades/Min

(iii) Cyclic - 350 to 400grenades/Min

(d) **Flexibility**. It can be mounted on a vehicle or helicopter. It can fire in low angle as well as in high angle. It has crest clearance capability. Flexibility is mainly due to:-

(i) Controlled Elevation - 67 degrees
(ii) Controlled Depression - 14 degrees
(iii) Free Traverse - 260 degrees

(e) **Effect of Fire**. It fires a fragmentation type of grenade which can be fired in a single shot or burst mode. The killing area of a grenade is 7 m all around from the point of burst.

(e) **Limitations**. It has the following limitations:-

(i) Due to sustained fire small parts get damaged.
(ii) Barrel needs to be cooled after firing 80 to 90 grenades.
(iii) It gives out flash and blast on firing.

84 mm Rocket Launcher.

(a) Caliber– 84 mm

(b) Weight– 16 kg with mount and telescopic sight

(c) Length – 1065 mm

(d) Traverse– No traverse of its own

(e) Range

(i) HEAT - 400m (moving targets) 500 m (stationery targets)
(ii) HE - 1000m (killing area 10 m)
(iii) Smoke - 1300 m (width 15 m)
(iv) Illumination - 2100 m (area of 400- 500 m diameter for 30 seconds)

(f) Rate of fire – Maximum sustained 06 rounds per minute.

(g) Types of ammunition– Heat, HE, Smoke, Illumination

(h) Armor Penetration – 400 mm (Heat)

(j) Back Blast Area - 15 m

Conclusion

The rifleman of an infantry rifle company is capable of closing with the enemy and neutralise him with his personnel weapon. However with the presence of company support weapons his punch increases. The company support weapons give additional effective strength to the Infantry Rifle Company both in defensive well as offensive operations.

CHAPTER - IV

CHARECTERISTICS OF INFANTRY BATTALION SUPPORT WEAPONS

Introduction

The Infantry Battalion is a balanced force which can withstand any difficult situation both in offensive, defensive, as well as in special operations against the enemy. The support weapons available with the Battalion can contain the plan of the enemy by causing maximum damage both in fortified fire positions and Armoured protected tanks/personal carriers.. Infantry battalion has inherent fire power capability at long ranges in terms of battalion support weapons. The two important infantry battalion support weapons are 81mm Mortor and Anti Tank guided missile.

81mm Mortars

81mm Mortar

81mm Mortar firing in progress

Characteristics of 81mm Mortars.

(a) Caliber - 81 mm

(b) Weight - 40.6 kg (without sight)
4.7 kg (sight without case)

(c) Range

(i) Minimum – 68mts (from safety point of view 90 m)

(ii) Maximum – 5200 m

(d) Rate of Fire (per minute)

(i) Slow – 6-8 rounds

(ii) Normal – 9-11 rounds

(iii) Rapid – 12- 20 rounds

(e) Muzzle Velocity – 305 m/sec (maximum)

(f) Elevation Limit –45 degrees to 85 degrees (g)

(g) Safety Distance – Flanking 200 m, Overhead 250 m

Anti Tank Guided Missile (ATGM)

(a)	Minimum Range	-	75m
(b)	Maximum Range	-	2500m
(c)	Rate of Fire	-	03 missiles per minute
(d)	Hit Probability	-	90% to 96%
(e)	Accuracy	-	60 cm around point of aim, at maximum range
(f)	Generation	-	Second
(g)	Launcher Mount		
	(i) Traverse	-	360 degrees
	(ii) Elevation	-	8degrees + 20 degrees
	(iii) Magnification	-	10 times
(h)	Guidance	-	Semi automatic optically tracked Wire guided
(j)	Penetration	-	At 90 degrees angle of impact 460mm At 60 degrees angle of impact 230mm

Anti-Tank Guided Missile Launcher

Anti-Tank Guided Missile Firing in Progress

Visit To Infantry Battalion

Cadets will be taken on a visit to any nearest Infantry Battalion to show the support weapons on ground where ever possible. In the absence of Infantry Battalion a short video can be screened showing the Infantry Battalion and company support weapons for better understanding of the cadets.

Conclusion

The fire power with the Infantry Battalion as its support weapons in the form of 81 mm mortar and anti tank missile makes its formidable force to deal with. The rifle companies of the Infantry Battalion are able to fight their battle in effective and efficient manner with the availability of these Battalion support weapons. It provides the fire support as well as metal support to the troops fighting on ground.

SUMMARY

- 5.56 INSAS Rifle is the personal weapon of Indian Army. INSAS Rifle is 25% lighter and has 70% less recoil as compared to 7.62mm SLR. INSAS Rifle is lighter, compact and easy to fire. (INSAS-Indian Small Arms System).

- Types of ammunition used:-
  - Ball round.
  - Tracer round.
  - Blank round.
  - High Density cartridge.
- Infantry Battalion is basic fighting unit of Indian Army. It can fight an opponent independently or as part of a larger force. The strength of an Infantry Battalion is 20 officers, 42 JCOs, 794 other ranks.

- Section is the smallest fighting unit of a Battalion.
- Capabilities are:-
  - Self-reliance.
  - Ability to hold ground
  - Adaptability.
  - Mobility

- Characteristics of company support weapons:-
  - 7.62 mm Dragunov Sniper Rifle.
  - 7.62 mm Medium Machine Gun.
  - 30 mm Medium Grenade Launcher.
  - 84 mm Rocket Launcher.
- Characteristics of infantry battalion support weapons.
  - The infantry battalion support weapons causes' maximum casualty to the enemy.
  - Used both in offensive, defensive and special operations against the enemy.
  - Types of infantry battalion support weapons – 81 mm mortar and Anti-tank guided missile.

- Characteristics of 81 mm mortar and anti-tank guided missiles – weight, range, rate of fire, muzzle velocity, elevation etc.

Comprehension Questions:

Q1. Answer the following in about 15 words:

(a) What stands for INSAS?

(b) What is the calibre of INSAS rifle?

(c) What is the total weight of INSAS rifle with magazine?

(d) What is the basic fighting unit of an Infantry Battalion?

(e) What is the total strength of an Infantry Battalion?

(f) Name four types of company support weapons.

(g) What are the types of ammunition fired from7.62 mm Dragunov sniper rifle?

(h) What do you mean by flexibility of 30 mm Automatic Grenade Launcher?

(i) What type of ammunition is used in 81mm Mortar?

(j) Mention two Infantry Battalion Support weapons.

(k) What is the rate of fire per minute from a 81 mm Mortar?

(l) What is the maximum elevation limit of a 81 mm Mortar?

(m) What safety distance should be maintained while firing from a 81 mm Mortar?

(n) What is the guidance of ATGM?

(o) What is the hit probability when fired from Anti-Tank Guided Missile?

Q4. Answer the following in about 50 words:

(a) What is the calibre and effective range of 5.56 mm INSAS Rifle?

(b) What are the rates of fire for 5.56 mm INSAS Rifle?

(c) What all kinds of ammunition are fired from INSAS rifle?

(d) What do you understand by Three Round Burst?

(e) Why 5.56mm is preferred over 7.62mm?

(f) What all parts of 5.56 INSAS rifle are affected by gas and why they should be cleaned properly?

(g) What is the organisation of an Infantry company?

(h) What is the organisation of an Infantry support company?

(i) What is the basic role of an Infantry Battalion?

Q.5. Answer the following in about 75 words:

(a) What is the cleaning process of a rifle after firing?

(b) What all parts of a rifle is to be oiled and why?

(c) What is the inspection procedure after assembling?

(d) What is the employability of an Infantry Battalion?

(e) What is the detailed organisation of Head Quarter Company of an Infantry Battalion?

(f) Mention the rates of fire from 7.62 mm Medium Machine Gun and 30 mm Automatic Grenade Launcher.

(g) Mention the range of 7.62 mm Medium Machine Gun.

(h) What do you mean by sustained fire?

(i) Why 30 mm Automatic Grenade Launcher is a flexible weapon?

(j) What are the limitations of 30 mm Automatic Grenade Launcher?

Q6. Answer the following in about 150 words:

(a) Describe method for 'preparation of a rifle'.

(b) Describe measures to check chamber of a rifle.

(c) What is Arctic trigger?

(d) What all items are required for cleaning of a rifle?

(e) What are the capabilities of an Infantry Battalion?

Q7. Answer the following in about 250 words:

(a) Explain the method of stripping of 5.56 mm INSAS Rifle.

(b) Explain the method of assembling of 5.56 mm INSAS Rifle

(c) What are the characteristics of 81 mm Mortar?

(d) What are types of Infantry Company support weapons? Write short note on 84 mm Rocket Launcher.

(e) Give out the detailed organisation of an Infantry Battalion.

UNIT 5 : MILITARY HISTORY

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UNIT 5 :MILITARY HISTORY

Knowledge	Understanding	Application Skill	Evaluation
Biographies of Renowned Generals	The student will understand the life, history and leadership qualities of great Generals.	The student will be able to apply lessons learnt of past in future.	Activities, work sheets, assignments.
Indian Army war Heroes-PVCs	The student will know the accomplishments of leaders in various kinds of battlesituations which led to great victories.	The student will be able to use these facts to get motivated and emulate them in future.	Activities, work sheets, assignments.
Study of Battles of Indo-Pak War1965, 1971 & Kargil	To make students understand how wars were fought and won by army.	The students will imbibe patriotism spirit and volunteer for armed forces.	Activities, work sheets and assignments, mock exercises
War Movies	To make students understand how wars were fought and its intricacies.	The students will be motivated to join armed forces.	Multimedia Presentation Assignments

CHAPTER – I

BIOGRAPHIES OF RENOWNED GENERALS

Introduction

Military History is a humanities discipline, within the scope of general istorical recording of armed conflicts in the history of humanity, and its impact on the societies, their cultures, economies and changing national and international relationships. The essential subjects of military history study are the causes of war, the social and cultural foundations, military doctrine on each side, the logistics, leadership, technology, strategy, and tactics used, and how these changed over time. Thus it is a dynamic discipline.

Importance / Necessity Of Studying Ilitary History

History of the World is Largely a History of Warfare

Military history is a valuable field of study to both professional soldiers and civilians. As historian John Keegan said, “The written history of the world is largely a history of warfare.”

Yet one may argue if someone is not preparing for war, what is the point of studying the military past? War is such a dominant feature of human history that most modern nation-states and the nation-state system itself came into existence either through or because of war.

All Civilisations have Wars in their Culture

All civilizations have war in their cultures and "the states within which we live today came into existence largely through conquest, civil strife or struggles for independence." Consider the United States, a nation forged by the Revolutionary War, re-forged by the Civil War, and expanded through wars with Native Americans, Mexico and Spain.

The study of history, politics and culture over the last millennia of human history would be impossible without a study of military history. Without military history, placing these massive changes in their proper context would be impossible.

From War Arise Greatest Leaders in History

Maximum leaders in history have arisen from this conflict / strive. To name a few – Abraham Lincoln of USA, Winston Churchill of Great Britain and Mrs. Indira Gandhi of India, are best remembered for their contribution in wars. These figures in history "understood the use of violence and did not hesitate to use it for their ends."

Study of Military History Affects the Future of Civilisations

More importantly, most voters lack any military experience, yet elect leaders-with predominately the same lack of experience--to control the most powerful armies in the world. These leaders will determine if and how their countries will wage wars. These decisions will affect the future of civilizations. Military history fills in the gap where personal experience is sorely lacking. As warfare continues to influence our world today, we who study military history must continue to learn, and to teach, the lessons demonstrated in history.

Study of Military History Developes Leadership Qualities

Study of Military History we come across many leaders with above mention leadership qualities, study of military history helps us to know and develop the leadership qualities and learn about leadership traits. These include Alertness, Courage, Dependability, Endurance, Initiative, Integrity, Judgement, Justice, Knowledge, Loyalty, Sense of Humour, Truthfulness, Espirit-de-Corps, Maturity, Humility and Patience

Study of Military History is a Must for Political and Military Commanders

Applying Past Lessons help us to plan for the future. History can also show how certain plans/moves led to victory or defeat. Military and Civil leaders can strategize based on the history to develop more concrete techniques to win the battles in future. In addition, history has also taught us that it is important to have the support of our home front prior to sending our soldiers to war, especially for extended periods.

We must also understand the ideology of our enemy. Taking the time to learn the mind set and thought process of an enemy does provide us with the adequate tools to properly prepare ourselves for current and future wars. Soldiers can learn strategy, operational art, tactics, techniques, battle procedures/drills, logistic and management aspects, leadership qualities and styles from military history.

Biography Of Field Marshal Kodandera Madappa Cariappa, Obe

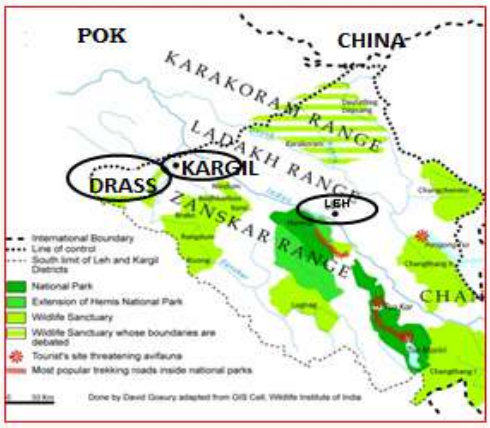
Field Marshal Kodandera "Kipper" Madappa Cariappa, OBE (28 January 1899 – 15th May 1993) was the first Indian Chief of Army Staff of the Indian Army and led the Indian forces on the Western Front during the Indo-Pakistan War of 1947-48. He is among only two Indian Army officers to hold the highest rank of Field Marshal (the other being Field Marshal Sam Bahadur Manekshaw). His distinguished military career spanned almost three decades, at the highest point of which, he was appointed as the Commander-in-Chief of the Indian Military in 1949.

Early Life and Military Career

Cariappa was born at Shanivarsante in Kodagu (Coorg) which is currently in Karnataka. In 1919, he joined the first batch of KCIOs (King's Commissioned Indian Officers) at The Daly College at Indore and was commissioned into the Carnatic Infantry at Bombay as a Temporary Second Lieutenant. In 1927, Cariappa was promoted to Captain. He saw active service with the 37 (Prince of Wales) Dogra in Mesopotamia (present-day Iraq) and was later posted to the 2nd Queen Victoria's Own Rajput Light Infantry, which became his permanent regimental home. He was the first Indian officer to undergo the course at Staff College, Quetta in 1933. He was promoted to the rank of Major in 1938.

Cariappa served in Iraq, Syria and Iran from 1941–1942 and then in Burma in 1943-1944. He spent many of his soldiering years in Waziristan. He earned his 'Mentioned in Despatches' as DAA and QMG of General (later Field Marshal) Slim's 10th Division. He was the first Indian Officer to be given command of a unit in 1942. By 1944, Cariappa was a Temporary Lieutenant-Colonel. After command, he volunteered to serve in 26 Division engaged in clearing the Japanese from Burma, where he was decorated with an "Officer of the Order of the British Empire." In 1946, he was promoted as the Brigadier of the

Frontier Brigade Group. Post-Independence, Cariappa was appointed as the DeputyChief of the General Staff with the rank of Major General. On promotion as Lieutenant General, he became the Eastern Army Commander.

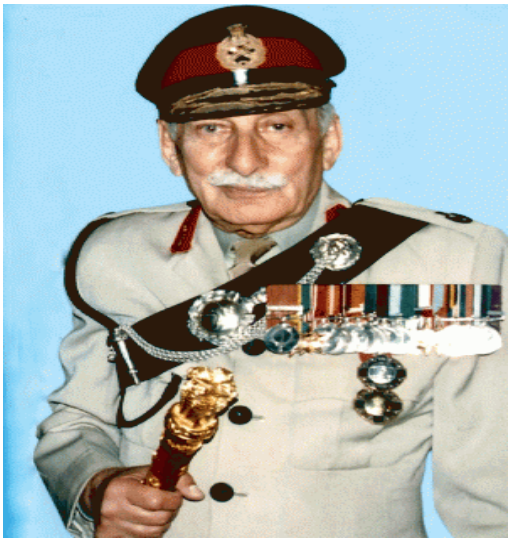


On outbreak of war with Pakistan in 1947, he was moved as General Officer Commanding-in-Chief, Western Command and directed operations for the recapture of Zojila, Drass and Kargil and re-established a linkup with Leh. In all this, he showed tremendous energy in moving troops, against considerable odds and finally ensuring success. On 15 January 1949 Cariappa was appointed as the first Indian Commander-in-Chief of the Indian Army. Cariappa was then instrumental in turning an Imperial Army into a National Army.

Higher Commands and Offices

AFTER HIS RETIREMENT FROM INDIAN ARMY IN 1953, HE SERVED AS THE HIGH COMMISSIONER TO AUSTRALIAAND NEW ZEALAND TILL 1956. HE WAS CONFERRED WITH 'ORDER OF THE CHIEF COMMANDER OF THE LEGION OF MERIT' BY US PRESIDENT, HARRY S. TRUMAN. AS A TOKEN OF GRATITUDE OF THE NATION FOR THE EXEMPLARY SERVICE RENDERED BY HIM, THE GOVERNMENT OF INDIA CONFERRED CARIAPPA WITH THE RANK OF FIELD MARSHAL ON 14TH JANUARY 1986 AT THE AGE OF 87.

Biography Of Field Marshal Sam Manekshaw, MC



Field Marshal Sam Hormusji Framji Jamshedji Manekshaw, MC (3 April 1914 – 27 June 2008), popularly known as Sam Bahadur ("Sam the Brave"), was an Indian military leader. He was the first Indian Army officer to be promoted to the five-star rank of Field Marshal.

Though Manekshaw initially thought of pursuing his career as a doctor, he later joined the first batch of the Indian Military Academy (IMA) when it was established in 1932. Right from his days at IMA, he proved to be witty and humorous in nature. He was first attached to the 2nd Battalion of Royal Scots, and then later posted to the 4th Battalion of 12th Frontier Force Regiment, commonly known as the 54th Sikhs. Following partition, he later reassigned to the 16th Punjab Regiment, before being posted to the 3rd Battalion, 5th Gorkha Rifles, for a brief period later he adopted 8th Gorkha Rifles. His distinguished military career spanned four decades and five wars, beginning with service in the British Indian Army in World War II. During action in World War II, he was awarded the Military Cross for gallantry.

Manekshaw rose to become the 8th Chief of Army Staff of the Indian Army in 1969 and under his command, Indian forces conducted victorious campaign against Pakistan in the Indo-Pakistani War of 1971 that led to the liberation of Bangladesh in December 1971. Later, he was awarded the Padma Bhushan and the Padma Vibhushan for his services to the Indian nation.

Early Life and Education

Manekshaw was born on 3 April 1914 in Amritsar, Punjab to Parsi parents, Hormusji Manekshaw, a doctor, and his wife Hilla, who moved to Punjab from the city of Valsad on the coastal Gujarat. Sam's father served in the British Indian Army as a Captain in the medical services and also participated in World War I. Hormusji and Hilla had six children of which Sam was the fifth one. Fali, Cilla, Jan and Sehroo preceded Sam and Sam was followed Jemi, who later joined the air force as a doctor and was the first Indian to be awarded the air surgeon's wings from Pensacola, United States. After completing his schooling in Punjab and Sherwood College, Nainital, and achieving a distinction in the School Certificate of the Cambridge Board at the age of 15, he asked his father to send him to London to become a gynaecologist. But his father refused to send him to London stating that he was not old enough.

The cadets of the first course of the Indian Military Academy (IMA) with Muhammad Musa (number 2) who was the General of the Pakistan Army during the 1965 war.

In an act of rebellion against his father's refusal, Manekshaw took the entrance examination for enrollment into the Indian Military Academy and was one of the fifteen cadets to be selected through open competition. He stood sixth in the order of merit. Just before taking over as the Chief of the Army Staff, at a function on 5 June 1969 to mark the centenary of Sherwood College, Manekshaw recalled that his years at the college had prepared him for war as they had taught him to live alone and independently, to fight without relent, tolerate hunger for long periods and to hate his enemy.

Military Career

Manekshaw's military career spanned four decades, from the British era and World War II, to the three wars against Pakistan and China after India's independence in 1947. He held several regimental, staff and command assignments. Manekshaw went on to become the 8th chief of the army staff, led the Indian Army successfully in a war with Pakistan and became India's first field marshal after independence. On commissioning, as per the practices of that time, Manekshaw was first attached to the 2nd Battalion, The Royal Scots, a British battalion, and was later posted to the 4th Battalion, 12th Frontier Force Regiment, commonly known as the 54th Sikhs. Manekshaw was later reassigned to the 16th Punjab Regiment, before being posted to the 3rd Battalion, 5th Gorkha Rifles, and then adopted 8th Gorkha Rifle after partition and went on to become the Colonel of the Regiment of 8th Gorkha Rifle.

World War II

During World War II, the then-Captain Manekshaw saw action in Burma in the 1942 campaign on the Sittang River with the 4th Battalion, 12 Frontier ForceRegiment, and had the rare distinction of being honoured for his bravery on the battlefield. During the fighting around Pagoda Hill, a key position on the left of the Sittang bridgehead, he led his company in a counter-attack against the invading Japanese Army and despite suffering 50% casualties the company managed to achieve its objective. After capturing the hill, Manekshaw was hit by a burst of Light Machine Gun fire and was severely wounded in the stomach. Observing the battle, Major General David Cowan, the then commander of the 17th Infantry Division, spotted Manekshaw holding on to life and, having witnessed his valour in the face of stiff resistance, rushed over to him. Fearing that Manekshaw would die, the general pinned his own Military Cross ribbon to Manekshaw saying, "A dead person cannot be awarded a Military Cross." The official recommendation for the MC states that the success of the attack was largely due to the excellent leadership and bearing of Captain Manekshaw. This award was made official with the publication of the notification in a supplement to the London Gazette on 21 April 1942 (dated 23 April 1942).

Chief of the Army Staff

Then Chief of the Army Staff (COAS) General P P Kumar amangalam was due to retire in June 1969. Though Manekshaw was the senior-most commander in army, then Defence Minister Sardar Swaran Singh was in favour of Lt Gen Harbaksh Singh, who had played a key role as the GOC-in-C of Western Command during the1965 Indo-Pak war. Putting the rumours of Harbaksh Singh taking charge as the COAS to an end, Manekshaw was appointed as the 8th Chief of the Army Staff on 8 June 1969. As the Chief of the Army Staff, he developed the Indian Army into an efficient instrument of war. During his tenure as COAS, he was instrumental in stopping the implementation of reservations for scheduled castes and scheduled tribes in the army.

Indo-Pakistan War of 1971

Towards the end of April 1971, Indira Gandhi, the Prime Minister of India, during a cabinet meeting, asked Manekshaw if he was prepared to go to war with Pakistan. In response, Manekshaw told her that his single armoured division and two infantry divisions were deployed elsewhere, that only 13 of his 189 tanks were fit to fight, and that they would be competing for rail carriage with the grain harvest at that point of time. He also pointed out that the Himalayan passes would soon open up, with the forthcoming monsoon in East Pakistan, which would result in heavy flooding. When Indira Gandhi asked the cabinet to leave the room and the chief to stay, he offered to resign. She declined to accept it, but sought his advice. He then said he could guarantee victory if she would allow him to prepare for the conflict on his terms, and set a date for it. These were acceded to by the Prime Minister.

Under Manekshaw's direction, the army launched several preparatory operations in East Pakistan including training and equipping the Mukti Bahini (a local group of freedom fighters), and about three brigades from the regular Bangladesh troops were trained. As an additional measure, 75,000 guerrillas were trained and equipped with arms and ammunition. These forces were used to harass the Pakistani army stationed in East Pakistan sporadically in the lead up to the war.

The war started on 3 December 1971, when Pakistani aircraft bombed Indian Air Force bases in the western sector. Manekshaw instructed Lt Gen J F R Jacob, Chief of Staff Eastern Command, to inform the Indian prime minister that orders were being issued for the movement of troops from Eastern Command. The following day, the navy and the air force also initiated full-scale operations on both eastern and western fronts. The veto used by the Russians against the United States' proposal to implement a cease-fire in the United Nations proved decisive in securing India's victory. Manekshaw addressed the Pakistani troops three times via radio messages on the subject of surrender, assuring them that they would receive honourable treatment from the Indian troops. The messages were broadcast on the 9th, 11th and 15 December. The last two messages were delivered as replies to the messages from Maj Gen Rao Farman Ali and Lt Gen Amir Abdullah Khan Niazi. These messages from the Pakistani commanders to their troops were to have a devastating effect on their side, subsequently leading to their defeat.

Though on 11 December, Ali messaged the United Nations requesting for a cease-fire, it was not authorized by the President Yahya Khan and the fighting continued. Following several discussions and consultations, and subsequent attacks by the Indian forces, Yahya decided to stop the war in order to save the lives of the Pakistani soldiers. The actual decision to surrender was taken by Niazi on 15 December and was conveyed to Manekshaw through the United States Consul General in Dhaka (then Dacca) via Washington. But Manekshaw replied that he would stop the war only if the Pakistani troops surrendered to their Indian counterparts by 9:00 a.m. on 16 December. Later the deadline was extended to 3:00 p.m. of the same day on Niazi's request. The Instrument of Surrender was formally signed on 16 December 1971.

Promotion to Field Marshal

After the end of the war, Indira Gandhi decided to promote Manekshaw to the rank of Field Marshal and subsequently appoint him as the Chief of the Defence Staff (CDS). However, after several objections from the bureaucracy and the commanders of the navy and the air force, the latter was dropped. Though Manekshaw was to retire in June 1972, his term was extended by a period of six months. On 3 December 1973, Manekshaw was conferred with the rank of Field Marshal at a ceremony held at Rashtrapati Bhavan.

Conclusion

Today the Indian Military is the third largest in the world. As India is planning to emerge as a regional super power, it is mandatory for its civilian and military leaders to learn from military history to be ready to meet future challenges. We can learn a lot from the biographies of Field Marshals Cariappa and Sam Manekshaw. Therefore, it is important for all cadets to study the biographies of Field Marshal Cariappa and Field Marshal Sam Manekshaw. The Leadership qualities displayed by them worth emulating in every walks of life.

The Instrument of Surrender being signed on 16 December 1971

CHAPTER – II

INDIAN ARMY WAR HEROES PVC

Introduction

Our Army has been involved in five major wars with our neighbouring countries. We have fought four wars with Pakistan and one with China. Other major operations undertaken by the army include Operation Meghdoot and Operation Cactus, Operation Pawan and Operation Rakshak. Apart from above mentioned operations, the army has also been an active participant in United Nations peacekeeping missions. The Indian Army has shown thorough professionalism, dedication and devotion while participating in all these wars and operations. And for the same many gallantry awards have been awarded to Indian Army for displaying courage, bravery and selfless dedication beyond the call of duty.

Param Vir Chakra And War Heroes Decorated With Pvcs

Param Vir Chakra

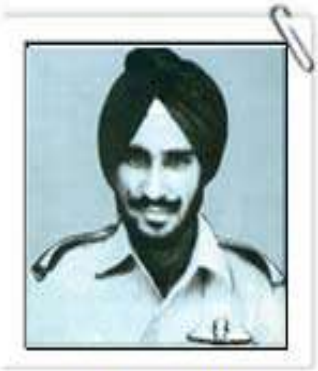
The **ParamVir Chakra (PVC)** is India's highest Military decoration awarded for highest degree of valour or self-sacrifice in the presence of enemy. The medal has been awarded 21 times 14 of which were posthumous awards. Literally meaning "Wheels (or cross) of the ultimate brave'' it is similar to Medal of Honor in the United States and the Victoria Cross in the United Kingdom. The PVC was established on 26 January 1950 by the President of India, with effect from 15 August 1947. It can be awarded to Officers or enlisted personnel from all branches of the Indian military. It isthe highest gallantry award of the Government of India.

Param Vir Chakra and its ribbon, the highest military decoration of India

The Design

The medal was designed by Savitri Khanolkar who was married to an Indian Army Officer, Vikram Khanolkar of the Sikh Regiment. This was done following a request from the first Adjutant General, Major General HiraLal who in turn had been entrusted with the responsibility of coming up with an Indian equivalent of the Victoria Cross by Pandit Jawaharlal Nehru.The medal is a circular bronze disc 1.375 inches (3.49cms) in diameter. The state emblem appears in the Centre, on a raised circle surrounding this, four replicas of Vajra, the all-powerful mythic weapon of Indra the ancient Vedic king of Gods. The motif symbolizes the sacrifice of Rishi Dadhichi, who had donated his bones to Gods for making Vajra

Recipients of the ParamVir Chakras.



Flying Officer
Nirmal Jit Sing Sekhon
18 Squadron, Indian Air Force
(1971)

2nd Lt Arun Khetrapal
(Posthumous) 17 HORSE
(1971)

Major Hoshiar Singh,
3 GRENADIERS (1971)

Naib Subedar Bana Singh,
8 JAK LI (1987)

Major R Parameswaran
(Posthumous), 8 MAHAR
(1987)

Lt Manoj Kumar Pandey
(Posthumous), 1/11 GR
(1999)

Grenadier Yogender
Singh Yadav, 18
GRENADIERS (1999)

Rifleman Sanjay Kumar,
13 JAK RIF (1999)

Capt Vikram Batra
(Posthumous), 13 JAK RIF
(1999)

Major Somnath Sharma (Posthumous), 4 KUMAON (1947)

Lance Naik Karam Singh, 1 SIKH (1948)

2nd Lt Rama Raghoba Rane, BOMBAY ENGINEER (1948)

Naik Jadunath Singh (Posthumous), 1 RAJPUT (1948)

CHM Piru Singh (Posthumous), 6 RAJ RIF (1948)

Capt Gurbachan Singh Salaria (Posthumous), 3/1 GR (1961)

Major Dhan Singh Thapa, 1/8 GR (1962)

Subedar Joginder Singh (Posthumous), 1 SIKH (1962)

Major Shaitan Singh (Posthumous) 13 KUMAON (1962)

CQMH Abdul Hamid (Posthumous), 4GRENADIERS (1965)

Lt Col AB Tarapore (Posthumous), 17 HORSE (1965)

Lance Naik Albert Ekka (Posthumous) 14 GUARDS (1971)

Chm Piru CHM Piru Singh,PVC

Piru Singh Shekhawat. PVC	
Born	20 May 1918 Beri, Rajasthan, India (then Rajputana)
Died	18 July 1948 (aged 30) Killed in action at Tithwal, Kashmir
Allegiance	British Indian Empire India
Service/branch	British Indian Army Indian Army
Years of service	1936–1948
Rank	Company Havildar Major
Unit	6th Battalion, Rajputna Rifles
Battles/wars	Indo-Pakistani War of 1947
Awards	Param Vir Chakra

Introduction Company Havildar MajorPiru Singh Shekhawat (20 May 1918 – 18 July 1948) was an Indian Army soldier, awarded the Param Vir Chakra (PVC), India's highest military decoration.

Singh enrolled in the British Indian Army on 20 May 1936, and was assigned to the 1st Punjab Regiment. Between 1940 and 1945, he served on the North-West Frontier and as an instructor, before deploying to Japan as part of the British Commonwealth Occupation Force. After independence, he took part in the Indo-Pakistani War of 1947, serving with the Indian Army's 6th Rajputana Rifles. During the battle, Singh was part of the leading section of a company that was assigned to capture a Pakistani post at Tithwal, in Jammu and Kashmir. Soon after their attack was launched, the company suffered heavy casualties. In time, Singh successfully occupied a Pakistani medium machine-gun post. But, by that time, the entire company lay dead or wounded. Singh was left alone to achieve the objective. He moved out and lobbed grenades at the next enemy post. Before moving to another trench, he received a mortal bullet wound to the head.

Early Life

Piru Singh was born on 20 May 1918, in village Beri, Jhunjhunu, Rajasthan. He was the son of Lal Singh. His family consisted of seven children—three brothers and four sisters—with Singh being the youngest son. As a young boy, Singh always hated school, as he was unable to cope with the restricted environment. One day, after being scolded by his class teacher for quarreling with one of his classmates, Singh ran away, and never returned to school. After that, Singh continued to help his parents in their farm, and grew up to be well-built and handsome youth. Shikar, a local Indian sport, was his favourite game.[3] Though Singh wanted to join the army from his childhood, he was rejected twice, as he was too young, before he was accepted at the age of eighteen.

War 1947

Following tensions between the newly independent nations of India and Pakistan, war broke out over control of the princely state of Jammu and Kashmir in October 1947, shortly after Singh returned from Japan. In July 1948, Pakistan launched offensive strikes in the Tithwal sector of Jammu and Kashmir, and captured a ring contour on 8 July. This forced the Indian troops stationed in the forward positions across river Kishanganga to retreat. In an attempt to reverse the situation, Singh's unit, the 6th Battalion of the Rajputana Rifles, was moved from Uri to Tithwal, and was assigned to the 163rd Brigade. The troops took position on the Tithwalbridge.

On 11 July, the Indian troops commenced their attack. These strikes continued for another four days. But reports regarding the situation suggested that the Pakistanis were still in command of a strategically important position and the Indian commanders decided that these had to be captured before the advance could continue. Apart from this position, another position was also to be captured by the Indians. The task of capturing these two positions was assigned to the 6th Rajputana Rifles. Two companies were assigned to the operation, with the battalion's 'C' Company securing the second position after the first was captured by 'D' Company.

On 18 July, the 'D' Company launched it first attack at 01:30. The path to the position held by the Pakistani troops was just 1 metre (3 ft 3 in) wide, and deep ravines lay on either side. This narrow path was overlooked by hidden Pakistani bunkers that allowed both observation and clear fields of fire for the defending troops. As they advanced, the Indian company was subjected to heavy shelling from the Pakistanis, and within half an hour the company had recorded fifty-one casualties.

During the battle, Singh's section, leading the company, was sheared down to half strength due to heavy casualties. Singh rushed towards a Pakistani medium machine gun post, which was causing most of the casualties, during which he suffered multiple shrapnel wounds across his body as the Pakistani defenders began rolling grenades down from the heights. Undeterred, Singh continued to advance adopting the battle cry, "Raja Ramchandra Ki Jai" (English: Hail Lord Rama). Soon he occupied the post killing the men on guard with his bayonet and Sten gun

But by the time he captured the position, the rest of his company lay dead or wounded. Singh was left alone to achieve the objective assigned. He advanced towards the second Pakistani medium machine gun post. At this juncture, he was almost blinded by a grenade that blast at his face. His Sten gun ammunition had run out. Singh moved out of the trench and lobbed grenades at the next Pakistani post. Meanwhile, he jumped into another trench, and killed two Pakistani soldiers with his bayonet. Before he was able to move out of the trench, he was hit by a bullet in his head. As he succumbed to his wounds, Singh hurled a grenade into a nearby Pakistani trench

Citation

On 17 July 1948, Company Havildar Major Singh was posthumously was awarded the India's highest military decoration, the Param Vir Chakra. The citation reads of follows:

South of Tithwal, 'D' Company, of which No 2831592 Piru Singh, was Havildar Major was detailed to attack and capture an enemy occupied hill feature. The enemy had well dug in positions and had sited his MMGs so as to cover all possible approaches. As the attack advanced, it was met with heavy MMG fire from both flanks. Volleys of grenades were hurled down from enemy bunkers. Company Havildar Major Piru Singh was then with the forward

most Section of the company. Seeing more than half of the Section killed or wounded, he did not lose courage. With battle cries he encouraged the remaining men and rushed forward with great determination onto the nearest enemy MMG position. Grenade splinters ripping his clothes and wounding him at several places, he continued to advance without the least regard for his safety. He was on top of the MMG position wounding the gun crew with Sten gun fire. With complete disregard to his bleeding wounds he made a mad jump on the MMG crew bayoneting them to death, thus silencing the gun. By then he suddenly realized that he was the sole survivor of the section, the rest of them either dead or wounded. Another grenade thrown at him wounded him in the face. With blood dripping from his face wounds in his eyes, he crawled out of the trench, hurling grenades at the next enemy position.

Maj Shaitan Singh,Pvc

Major Shaitan Singh Bhati, PVC	
Born	December 1, 1924 Jodhpur, Rajasthan, British Raj
Died	November 18, 1962 (aged 37) Rezang La, Jammu and Kashmir, India
Allegiance	Republic of India
Service/branch	Indian Army
Years of service	1949–1962
Rank	Major
Unit	13 KUMAON
Battles/wars	Sino-Indian War
Awards	Param Vir Chakra

Introduction . Major Shaitan Singh was born on December 1, 1924 at Jodhpur in Rajasthan. His father was Lt Col Hem Singh Bhati.

Military Action

The 'C' Company of the battalion, led by Singh, held this crucial position at Rezang La, at a height of 5000 metres.The company area was defended by three platoon positions and the surrounding terrain isolated it from the rest of the battalion. The expected Chinese attack on Rezang La came on November 18 in the morning. It was the end of a very cold winter night, with light snow falling. The icy winds howling through Rezang La were biting and benumbing. More than the thin air and cold, the location of Rezang La had a more serious drawback. It was crested to Indian artillery because of an intervening feature, which meant that they had to make without the protective comfort of the big guns. In the dim light of the morning, the Chinese were seen advancing through nullahs to attack No.7 and No.8 Shaitan Singh 2 platoon positions. The Indian Army troops fell on their prepared positions to face the Chinese offensive. At 0500 hours when the visibility improved, both platoons opened up on the advancing Chinese with rifles, light machine guns, grenades and mortars. Indian artillery could, however, not be used. The nullahs were littered with dead bodies. The survivors took position behind boulders and the dead bodies. The Chinese, though they failed the first frontal attack, were not discouraged. They subjected the Indian positions to intense artillery and mortar fire at about 0540 hours. Soon about 350 Chinese troops commenced advance through the nullahs. This time, No.9 Platoon, which held fire till the enemy was within 90 metres opened up with all weapons in their possession. Within minutes, the nullahs were again full of dead bodies, mainly of the Chinese. I in frontal attack, the enemy, approximately 400 strong, then attacked from the rear of the company position. They simultaneously opened intense medium machine gun fire on No.8 Platoon. This attack was contained at the barbed wire fencing of the post. The Chinese then resorted to heavy artillery and mortar shelling. An assault group of 120 Chinese also charged No.7 Platoon position from the rear. However, Indian Army 3-inch mortar killed many of them. When 20 survivors charged the post, about a dozen Kumaonis rushed out of their trenches to engage them in a hand-to-hand combat. Meanwhile, the Chinese brought up fresh reinforcements. The encirclement of No.7 Platoon was now complete. The platoon, however, fought valiantly till there was no survivor. No.8 Platoon also fought bravely to the last round. Singh displayed exemplary leadership and courage in the battle of Rezang La. By all accounts, he led his troops most admirably. Unmindful of his personal safety he moved from one platoon post to another and encouraged his men to fight. While moving among the posts he was seriously wounded, by a sniping Chinese MMG. But he continued to fight along with his men. While he was being evacuated by two of his comrades, the Chinese brought heavy machine gun fire on them. Singh sensed danger to their lives and ordered them to leave him. They placed him behind a boulder on the slopes of a hill, where he died. The Chinese announced a unilateral ceasefire on November 21, 1962. In this action, 109 Kumaonis out of a total of 123 were killed. Of the 14 survivors, 9 were severely injured. The Chinese suffered more than a thousand casualties.[2] After the war was over, the body of Singh was found at the same place, dead from the bullet wound and the freezing cold. It was flown to Jodhpur and cremated with full military honours. Singh was awarded ParamVir Chakra, the highest wartime gallantry medal, posthumously, for his leadership and devotion to duty.

Citation

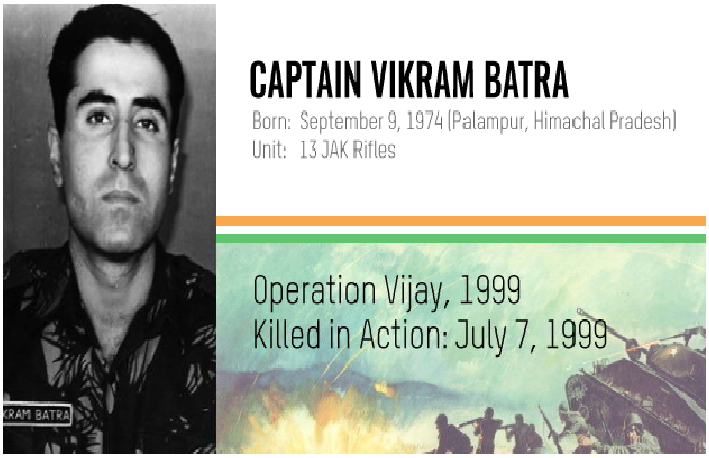
The citation for the ParamVir Chakra awarded to him reads: Major Shaitan Singh was commanding a company of an infantry battalion deployed at Rezang La in the Chushul sector at a height of about 17,000 feet. The locality was isolated from the main defended sector and consisted of five platoon-defended positions. On 18 November 1962, the Chinese forces subjected the company position to heavy artillery, mortar and small arms fire and attacked it in overwhelming strength in several successive waves. Against heavy odds, our troops beat back successive waves of enemy attack. During the action, Major Shaitan Singh dominated the scene of operations and moved at great personal risk from one platoon post to another, sustaining the morale of his hard-pressed platoon posts. While doing so he was seriously wounded but continued to encourage and lead his men who, following his brave example, fought gallantly and inflicted heavy casualties on the enemy. For every man lost to us, the enemy lost four or five. When Major Shaitan Singh fell disabled by wounds in his arms and abdomen, his men tried to evacuate him but they came under heavy machine-gun fire. Major Shaitan Singh then ordered his men to leave him to his fate in order to save their lives.

Captain Vikram Batra, PVC

Captain
Vikram Batra
Param Vir Chakra

Nickname(s)	Sher Shah
Born	9 September 1974 Palampur, Himachal Pradesh, India
Died	7 July 1999 (aged 24) Pt. 4875, Kargil, Jammu & Kashmir, India
Allegiance	Republic of India
Service/branch	Indian Army
Years of service	1996–1999
Rank	Captain
Service number	IC 57556
Unit	13 JAK RIF
Battles/wars	Kargil War Operation Vijay Battle of Tiger Hill
Awards	Param Vir Chakra

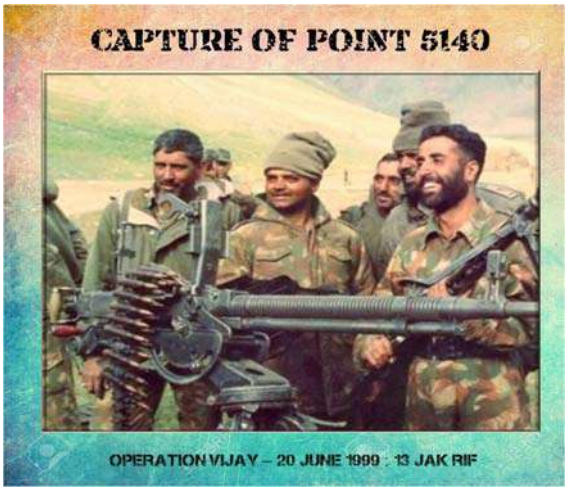
Captain VikramBatra, PVC (9 September 1974 – 7 July 1999) was an officer of the Indian Army, posthumously awarded with the ParamVir Chakra, India's highest and prestigious award for valour, for his actions during the 1999 Kargil War in Kashmir between India and Pakistan. He led one of the toughest operations in mountain warfare in Indian history. He was often called as ''Sher Shah'' in the intercepted messages of the Pakistan army.



Early Life and Career

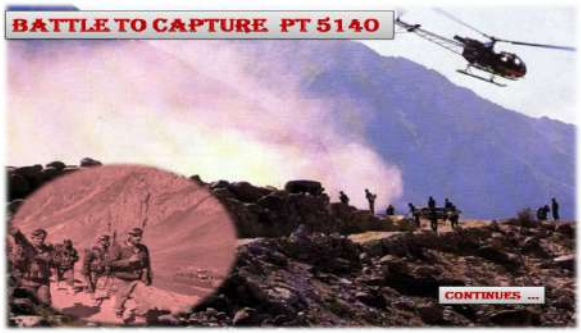
Vikram Batra was born on 9 September 1974 in Ghuggar village near Palampur, Himachal Pradesh, to G.L. Batra and Jai Kamal Batra. He got his primary education from his mother, who herself was a teacher. He received his education up to Middle Standard at the D.A.V. Public School in Palampur and up to senior secondary stage in Central School, Palampur. After passing his 10+2 in 1992 from Central School Palampur, he got admitted in D.A.V. College, Chandigarh in B.Sc where he was adjudged the best N.C.C. Cadet (Air Wing) in two zones. Later, he was selected to join the Indian Military Academy in Dehradun in 1996 in Jessore company of Manekshaw Battalion, and was commissioned in the Indian Army as a Lieutenant of the 13 Jammu & Kashmir Rifles at Sopore, in Jammu and Kashmir. He rose to the rank of Captain.

Kargil War



During the Kargil invasion of 1999 by Pakistan, Lt. Batra (at time), 13 JAK Rifles, and his Delta Company were ordered to recapture peak 5140 on June 19, 1999 five weeks after the war began. Nicknamed *SherShah* ('Lion King') in Urdu for his courage which also doubled as his call sign,[1] he decided to approach the hill from the rear, aiming to surprise the Pakistani defenders. He and his men ascended the sheer rock-cliff, but as the group neared the top, the enemy pinned them on the face of the bare cliff with machine gun fire. Captain Batra, along with five of his men, climbed up regardless and after reaching the top, hurled two grenades at the machine gun post. He single-handedly killed three enemy soldiers in close combat. He was seriously injured in the process, but insisted on regrouping his men to continue with the mission. Inspired by the courage displayed by Captain Batra, the soldiers of 13 JAK Rifles charged the enemy position and captured Point 5140 at 3:30 a.m. on 20 June 1999. His company is credited with killing at least eight Pakistani intruders and recovering a heavy machine gun.

The capture of Point 5140 set in motion a string of successes, such as Point 5100, Point 4700, Junction Peak and Three Pimples. Along with fellow Captain Anuj Nayyar, Batra led his men to victory with the recapture of Point 4750 and Point 4875. This led to the fall of Tiger Hill and India's eventual hold on the valley was strengthened.



Nine days later, Vikram Batra was assigned to an urgent mission to recapture peak 4875. This was one of the most difficult peaks to capture as the Pakistani troops sat above the peak at 16,000 feet and the climb gradient was 80 degrees. The fog made matters worse for Batra and his team. In the early morning hours of 7 July 1999, he commanded a mission to rescue an injured officer during a Pakistani counterattack against Point 4875. During the rescue attempt, he pushed aside his Subedar, saying ***"Tu baal-bacche dar hai, hat ja peeche****."(You have children, step aside)* and was killed in action while clearing enemy positions. His last words were, "*Jai Mata Di.*", which is a Punjabi creed referring to Durgadevi, the Hindu Goddess of Victory.

Conclusion

Soldiers face the dangers and vagaries of war and sacrifice their lives for their motherland. The Indian Nation also honours its bravest of the brave soldiers by conferring on them the highest gallantry award "Param Vir Chakra" as recognition of their bravery and sacrifice.

CHAPTER - III

STUDY OF BATTLES OF INDO-PAK WAR 1965, 1971 & KARGIL

Introduction

The partition of the subcontinent came into effect on15 August 1947,when India gained independence. Pakistan declared independence a day earlier. At the time of independence the old Indian Army stood divided between Pakistan and India. Instead of large scale celebrations, riots and mass killing between Hindus and Muslims in Punjab and Bengal intensified. It also led to acute suffering and misery of the displaced people, a part from colossal loss of precious human lives and destruction of property due to communal riots and retribution.

Taking advantage of communal strife, in Oct 1947 Pakistani troops soon crossed over into Kashmir to precipitate nun declared war with India. The tribal' volunteers' along with Pakistani regulars had by then overrun large tracts of Jammu province and the Valley, which shared a porous border with Pakistan. It was when they had reached Badgaon, on the suburbs of Srinagar that the Maharaja of J&K signed the Instrument of Accession and put in a bid for India's military assistance. Indian Army then swung into action to save J&K.

Despite the accession of the state, a part of Kashmir, known as Pakistan Occupied Kashmir, remains under the illegal occupation of Pakistan, and this has remained a contentious issue between both nations. Since 1947-1948 war India and Pakistan have fought the following wars:-

(a) 1965War.
(b) 1971 War.
(c) 1999Kargil War.
(d) Proxy war in J&K state since1988 till date.

Indo-Pakistani War Of 1965

The Indo-Pakistan war of 1965 was a culmination of skirmishes that took place between April 1965 and September 1965 between Pakistan and India. The conflict began following Pakistan's Operation Gibraltar, which was designed to infiltrate forces into Jammu and Kashmir to participate in insurgency against Indian rule.

Indo-Pakistani War of 1965	
Strength	
India	Pakistan
700,000 Infantry **700+ aircraft** **720 Tanks** • 186 Centurions • 346 Shermans • 90 AMX • 90 PT-76 **628 Artillery** • 66x 3.7"How • 450x 25pdr • 96x 5.5" • 16x 7.2"	**260,000 Infantry** **280 aircraft** **756 Tanks** • 352 Pattons • 308 Shermans • 96 Chaffees **552 Artillery** • 72x105mm How • 234X25pdr • 126x155mm How • 48x8" How • 72x3.7" How • POK Lt Btys

Casualties and losses	
India	Pakistan
Neutral claims • 3,000 men • 150[7]–190 tanks • 60–75 aircraft • 540 km^2 (210mi^2) of territory lost (primarily in Rann of Kutch)	**Neutral claims** • 3,800 men • 200-300 Tanks • 20 aircraf • Over 1,840 km^2 (710 mi^2) of territory lost (primarily in Sialkot, Lahore, and Kashmir sectors)
Indian claims • 35-59 aircraft lost In addition, Indian sources claim that there were 13 IAF aircraft lost in accidents, and 3 Indian civilian aircraft shot down. • 322 km^2 territory lost	**Pakistani claims** • 19 aircraft lost

In retaliation, India reacted swiftly and launched a counter attack and a second confrontation with Pakistan took place in 1965, largely over Kashmir. Pakistani President Ayub Khan launched Operation Gibraltar in August1965, during which several Pakistani paramilitary troops infiltrated into Indian-administered Kashmir and attempted to ignite an anti-India agitation in Jammu and Kashmir. Pakistani leaders believed that India, which was still recovering from the disastrous Sino-Indian War, would be unable to deal with a military thrust and a Kashmiri rebellion. Pakistan launched Operation Grand Slamon 1 September, in vading India's Chamb- Jaurian sector.

Offensive on Pakistan

Initially, the Indian Army met with considerable resistance in the northern sector. After launching prolonged artillery barrages against Pakistan, India was able to capture three important mountain positions in Kashmir. By 9 September,the Indian Army had made considerable in-roads into Pakistan. India had its largest haul of Pakistani tanks when the offensive of Pakistan's 1st Armoured Division was blunted at the Battle of Asal Uttar, which took place on 10 September near Khemkaran in Punjab. Another tank battle of the war came in the form of the Battle of Chawinda, the largest tank battle in history after World War II. Pakistan's defeat at the Battle of Asal Uttar and Dograi hastened the end of the conflict.

Battle of Dograi

To relieve pressure at Chamb–Jaurian Sector in J&K, 15 Infantry Division launched offensive in Lahore sector. 3 JAT of 54 Infantry Brigade crossed Ichogil canal and captured the town ship of Dograi and was just 13 miles from Lahore on 23 September 1965. On23 September 1965 cease fire was announced. A decision to return back to pre-war positions was taken following the Tashkent Declaration.

Indo-Pakistani War of 1965

Destroyed or abandoned Pakistani Patton and Sherman tanks on display near Khem Karan. About 97 Pakistani tanks were either destroyed or captured by India during the Battle of Asal Uttar.

Indo-Pakistani War of 1965

Tanks of 18th Cavalry (Indian Army) on the move during the 1965 Indo-Pak War.

Indo-Pakistani War of 1965

Lt. Col. Hari Singh of the India's 18th Cavalry posing outside a captured Pakistani police station (Barkee) in Lahore District.

Indo-Pakistan War Of 1971

An independence movement broke out in East Pakistan which was brutally crushed by Pakistani forces. Due to large-scale atrocities against them, thousands of Bengalis took refuge in neighboring India causinga major refugee crisis there. In early 1971, India declared its full-support for the Bengali rebels, known as Mukti Bahini, and Indian agents were extensively involved in covert operations to aid them. Wary of India's growing involvement in the Bengali rebellion, the Pakistan Air Force (PAF) launched a preemptive strike on 10 Indian air base sat Srinagar, Jammu, Pathankot, Amritsar, Agra, Adampur, Jodhpur, Jaisalmer, Uttarlai and Sirsaat 1745 hourson 3 December.

13.This aerial offensive, however, failed to accomplish its stated objectives and gave India its excuse to declare a full-scale war against Pakistan the same day. By midnight, the Indian Army, accompanied by Indian Air Force, launched a major three-pronged assault into East Pakistan. The Indian Army won several battles on the eastern front including the decisive of Battle of Hilli, which was the only front where the Pakistani Army was able to build up considerable resistance. India's massive early gains was largely attributed to the speed and flexibility with which Indian armoured divisions moved across East Pakistan.

Battle of Longewala

Pakistan launched a counter-attack against India on the western front. On 4 December 1971, the Acompany of the 23rd Battalion of India's Punjab Regiment detected and intercepted the movement of the 51st Infantry Brigade of the Pakistani Army near Ramgarh, Rajasthan. The battle of Longewala ensured during which the A company, though being out numbered, thwarted the Pakistani advance until the IndianAir Force directed its fighters to engage the Pakistani tanks. By the time the battle had ended, 38 Pakistani tanks and 100 armoured vehicles were either destroyed or abandoned.

About 200 Pakistani troops were killed in action during the battle while only 2 Indian soldiers lost their lives. Pakistan suffered another major defeat on the western front during the Battle of Basantar which was fought from 4 December to 16 December. By the end of the battle, about 66 Pakistani tanks were destroyed and 40 more were captured. In return, Pakistani forces were able to destroy only 11 Indian tanks. By 16 December, Pakistan had lost size able territory on both eastern and western fronts.

Surrender of Pakistan Army in Dhaka

Under the commando Lt. General J.S. Arora, the three corps of the Indian Army, which had invaded East Pakistan, entered Dhaka and forced Pakistani forces to surrender on 16 Dec 1971, one day after the Battle of Basantar. After Pakistan's Lt General A.A.K. Niazi signed the Instrument of Surrender, India took more than 90,000 Pakistani prisoners of war.

Indo-Pakistani War of 1971

Part of the Bangladesh Liberation War and Indo-Pakistani Wars

Pakistan's Lt. Gen. A. A. K. Niazi signing the instrument of surrender in Dhaka on 16 Dec 1971, in the presence of India's Lt. Gen. Aurora. Standing immediately behind from Left to Right: Indian Navy Vice Admiral Krishnan, Indian Air Force Air Marshal Dewan, Indian Army Lt Gen Sagat Singh, Maj Gen JFR Jacob (with Flt Lt Krishnamurthy peering over his shoulder). Veteran newscaster, Surojit Sen of All India Radio, is seen holding a microphone on the right.

Date	3–16 December 1971
Location	East Pakistan, India–West Pakistan border, the Line of Control, the Arabian Sea and the Bay of Bengal
Result	Decisive Indian victory. **Eastern front:** Pakistani forces surrender. **Western front:** Unilateral Ceasefire.
Territorial changes	• Independence of East Pakistan as Bangladesh • Indian forces captured around 5,795 square miles (15,010 km^2) land in the West but returned it in the Simla Agreement as a gesture of goodwill.

Belligerents

India Provisional Bangladesh	Pakistan

Indo-Pakistani War of 1971

Indo-Pak War Of 1971

Kargil Conflict-1999

In 1998, India carried out nuclear tests and a few days later, Pakistan responded by more nuclear tests giving both countries nuclear deterrence capability, although India had exploded three hydrogen bombs which Pakistan lacks. Diplomatic tension ceased after the Lahore Summit was held in 1999.The sense of optimism was short-lived, however, since mid-1999 Pakistani paramilitary forces and Kashmiri insurgents captured deserted, but strategic, Himalayan heights in the Kargil district of India. These had been vacated by the Indian army during the onset of the in hospitable winter and were supposed to reoccupy in spring. Once the scale of the Pakistani incursion was realised, the Indian Army quickly mobilized about 200,000 troops and Operation Vijay was launched.

The town of Kargil is strategically located.

However, since the heights were under Pakistani control, India was in a clear strategic disadvantage. From their observation posts, the Pakistani forces had a clear line-of-sight to bring down indirect artillery fire on NH 1A, inflicting heavy casualties on the Indians. Thus, the Indian Army's first priority was to recapture peaks that were in the immediate vicinity of NH1A. This resulted in Indian troops first targeting theTiger Hill and Tololing complex in Dras.

View Of Tololing

The Battle of Tololing, was one of the pivotal battles in the kargil war between Indian Armed forces and troops from Northern Light Infantry who were aided by other Pakistan irregulars in 1999. The Tololing is a dominate feature overlooking Srinagar-Leh (NH1D) and was vital link. The terrain was such that frontal attacks had to be launched which resulted in heavy causalities. The three week assault finally culminated with India taking control of the peak and changing the course of the war. 23 Indian soldiers were killed in the final assault, resulting in one of the costliest battle of the entire war. Other assaults, slowly tilted the combat in India's favour. Never the less, some of the posts put up stiff resistance, including Tiger Hill (Point5140) that fell only later in the war.

Kargil War

Part of the Indo-Pakistani Wars

Location of the conflict

Date	May–July 1999
Location	Kargil district, Jammu and Kashmir
Result	India regains possession of Kargil
Territorial changes	None

Belligerents	
India	Pakistan
Commanders and leaders	
Ved Prakash Malik	Pervez Musharraf
Strength	
30,000	5,000
Casualties and losses	
Indian official figures • 527 killed • 1,363 wounded • 1 POW • 1 fighter jet shot down • 1 fighter jet crashed • 1 helicopter shot down Pakistani claims • 1,600	Pakistani official figures • 357–453 killed • 665+ wounded • 8 POWs Other Pakistani claims • 1,000 to 4,000 killed Indian claims • 700+ killed

The Indian Army mounted some direct frontal ground assaults which were slow and took a heavy toll given the steep ascent that had to be made on peaks as high as 18,000 feet (5,500m). Two months in to the conflict, Indian troops had slowly retaken most of the ridges they had lost; according to official count, an estimated 75%–80% of the intruded area and nearly all high ground was back under Indian control. On 4 July 1999, Pakistan's Prime Minister Sharif agreed to with draw Pakistani troops under US pressure and the fighting came to a gradual halt, but some Pakistani forces remained in positions on the Indian side of the LOC.

Kargil War-1999

The Indian Army launched its final attacks in the last week of July; as soon as the Drass sub sector had been cleared of Pakistani forces, the fighting ceased on 26 July. 26 July has since been marked as 'Kargil Vijay Diwas' (Kargil Victory Day) in India. By the end of the war,India had resumed control of all territory south and least of the Line of Control, as was established in July 1972 as per the Shimla Accord.

Indian soldiers after winning a battle during the Kargil War

IAF MiG-21s were used extensively in the Kargil War.

Kargil conflict 26th July 1999

Memorial of Operation Vijay

The main entrance of Kargil War Memorial by the Indian Army at Dras, India

Kargil War Memorial, Patna

Conclusion

Wars with Pakistan has been a regular affair in the long history of both countries. This is a compulsive and existential necessity for the Pakistani State controlled by their military. The sacrifices made by the Indian Army to safeguard the sovereignty and integrity of the nation are great, for which the whole nation is proud of its achievements.

CHAPTER IV

WAR MOVIES

Introduction

Battles are fought in the wilderness and away from limelight. However ferocious and destructive they may be. Historians have always tried to piece together those little but significant actions by individuals and groups bringing out their valour and courage for the consumption of future generations. Here we will see three visual documentaries on Indo – Pak wars of 1965, 1971 and 1999 to gain further insight on the subject.

Documentary On Indo – Pak War 1965

Screening of documentary on Indo – Pak war 1965.

Documentary On Indo – Pak War 1971

Screening of documentary on Indo – Pak war 1971.

Documentary On Kargil Conflict 1999

Screening of documentary on Indo – Pak Kargil Conflict, 1999.

Conclusion

The study of the Indo-Pak War brings out the sacrifices made by the Armed Forces of India. It is heartening to see the role of Armed Forces in maintaining the sovereignty and integrity of our nation. One must salute the war heroes and all those who have laid down their lives for the motherland.

Summary

- **Field Marshal KM Cariappa, OBE was** the first native Indian **Chief of Army Staff of the Indian Army**. He is among only two Indian Army officers to hold the highest rank of Field Marshal. He was appointed as the Commander-in-Chief of the Indian Military in 1949, received the rank of Field Marshal On 14th January 1986 at the age of 87.

- **The Param Vir Chakra (PVC)** is India's highest military decoration award for highest degree of valor or self-sacrifice in the presence of enemy. The PVC was established on 26 January 1950 by the President of India. The medal was designed by Mrs Savitri Khanolkar.

- **CHM Piru Singh Shekhawat, PVC** on 17 July 1948, Company Havildar Major Singh was posthumously was awarded the India's highest military decoration, the Param Vir Chakra..

- **Maj Shaitan Singh, PVC** was awarded ParamVir Chakra, the highest artime gallantry medal, posthumously, for his leadership and devotion to duty.

- **Captain Vikram Batra, PVC** was posthumously awarded with the ParamVir Chakra for his actions during the 1999 Kargil Conflict. He led one of the toughest operations in mountain warfare in Indian history.

- **India has fought four wars with Pakistan so far, 1947-48 War,1965 War,1971 War, Kargil Conflict**

- **War of 1965**

  - Pakistan launched Operation Gibraltar to support insurgency in J&K against Indian rule.

  - In retaliation India launched Operation Grand Slam in western sector against Pakistan.

  - The famous battles of 1965 war include Battle of Asal-Uttar, Battle of Dograi etc.

  - Battle of Chawinda was the largest tank battle in the history after World War II.

- **War of 1971**

  - Inearly1971,Indiadeclareditsfull-support forthe Bengalirebels, Known as Mukti Bahini.

  - Battle of Longewala was fought on 4 December 1971.

  - On16 December 1971, more than 90000 Pakistani soldiers surrendered at Dhaka.

  - **Kargil Conflict– 1999** was fought on the heights of Kargil and Drass in 1999. In mid-1999 Pakistani paramilitary forces and Kashmiri insurgents captured deserted, but strategic, Himalayan heights in the Kargil district of India. Indian forces pain staking recaptured all posts one after another in a bloody conflict. Operation Vijay was declared success on 26 July1999.

Comprehension Questions:

Q1. Answer the following in about 50 words:

(a) Write a short note on ParamVir Chakra.

(b) Write a note on Maj Shaitan singh, PVC.

(c) Write a note on Battle of Longewala.

(d) Write a note on Battle of Dograi.

(e) Write short note on the surrender of Pakistan Army in Dhaka.

Q2. Answer the following in about 75 words:

(a) Write a short note on CHM Piru Singh Shekhawat, PVC.

(b) Write short note on Recipients of the Param Vir Chakras.

(c) What is the importance of studying military history?

Q3. Answer the following in about 150 words:

(a) Discuss in detail about Indo – Pakistan War 1965.

(b) Discuss in detail about Indo – Pakistan War 1971.

(c) Discuss in detail about the Operation Vijay.

(d) Write a brief note on Captain Vikram Batra, PVC.

Q4. Answer the following in about 250 words:

(a) Give the biography of Field Marshal KM Cariappa, OBE.

(b) Give the biography of Field Marshal Sam Manekshaw, MC.

(c) What are the leadership traits displayed by the Field Marshal in their Military career?

(d) Describe the events leading to Indo-Pak war of 1971.

UNIT 6: COMMUNICATION

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UNIT 6 :COMMUNICATION

Knowledge	Understanding	Application Skills	Evaluation
Types of Communications	The cadet will understand the various types of communication available to them and their use in different circumstances.	The cadet will be able to effectively and economically utilize the resources of communication available to them.	Activities, work sheets, assignments
Characteristics of Wireless	The cadet will understand the characteristics of Wi-Fi system and their functioning in day to day life.	The cadet will be able to use these as and when required without compromising the security.	Activities, and assignments
Characteristics of Walkie /Talkie	To understand the basic functioning of Radio sets	To learn and apply basic knowledge of Radio sets and Radio Telephony.	Activities
Basic Radio Telephony Procedure	To understand the basics of Radio Telephony and how to communicate using RT procedures	To learn and apply knowledge of Radio Telephony during activities	Activities, exercises, work sheets, outdoor exercises
Latest Trends and Developments (Multimedia, video conferencing, IT)	To understand the basic knowledge in recent trends and developments in Communication	To learn and apply knowledge of Multimedia, video conferencing, IT etc. in day to day functioning	Activities, exercises, work sheets, outdoor exercises

CHAPTER – I

TYPES OF COMMUNICATION

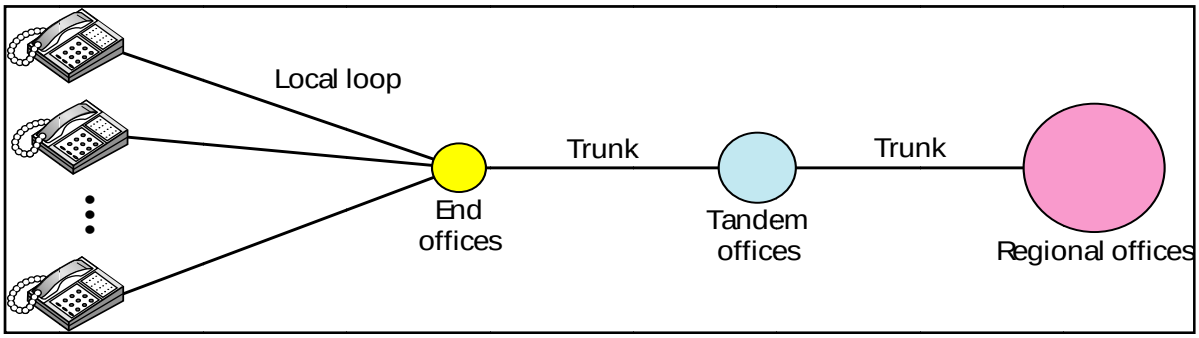
Introduction

Communication is the easy transmission of thoughts and ideas from one individual to another and vice-a-versa and reception and understanding of others ideas in the original form. Various forms of communications are sign language, voice, written script, line transmission, radio wave, space wave and highly complex digital communication. In modern battlefield, activities of the army have become very complex and require frequent communication between commanders and troops to achieve the desired results. Importance of communications is becoming a major ingredient of modern warfare.

Line Communication

Line Communication

The invention of telephone by Graham Bell revolutionized the world of communications as individuals were able to speak directly to each other. This is the basic means of signal communications for a force which is static. A telephone is by far the best means of signal communication between individuals



Advantages.

(a) Reliable and practically free from electrical interference.

(b) Relatively secure.

(c) Number of circuits and message carrying capacity is more but limited only by availability of material and manpower.

Disadvantages.

(d) Vulnerable to physical interference and enemy interception along the entire length of the route.

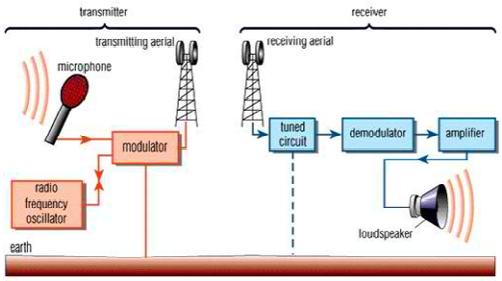
(e) Takes time to construct.

(f) Inflexible once it is laid.

(g) Expensive in men and material

Radio Communication

Radio is the technology of using radio waves to carry information such as sound, by systematically modulating properties of electromagnetic energy waves. The information in the waves can be extracted when radio waves strike an electrical conductor and transformed back into its original form. Radio communication requires the use of both transmitting and receiving equipment. The transmitting equipment, which includes a radio transmitter and transmitting antenna, is installed at the point from which messages are transmitted. The receiving equipment, which includes a radio receiver and receiving antenna, is installed at the point at which messages are received



Wave. A wave can be described as a disturbance that travels through a medium from one location to another location. Types of waves can broadly be divided in two parts :-

(h) **Mechanical Waves**. A mechanical wave is a wave that is an oscillation of matter, and therefore transfers energy through a medium.

(i) **Electromagnetic Waves**. Electromagnetic waves are waves which can travel through the vacuum of outer space.

Propagation of Wave. The mode of propagation of electromagnetic waves (EMW) from transmitter to receiver depends upon the frequency employed. These can be of following types :-

(j) **Sky Wave Propagation**. The sky waves are the radio-waves of frequency between 2 MHz to 30 MHz with a range is 100 km to 1000 Kms. These radio waves make use of ionosphere layer existing to a height of 150 - 200 km from the surface of earth and are reflected back by the ionosphere of earth's atmosphere.

(k) **Space Wave Propagation**. The space waves are the radio waves of very high frequency (i.e. between 30 MHz to 300 MHz or more). The propagation of VHF takes place in a straight line. The space waves can travel through atmosphere from transmitter antenna to receiver antenna either directly or after reflection from ground in the earth's troposphere region. Their range is limited by curvature of earth; therefore, distance between two neighboring stations is approx 50 Km.

(l) **Ground Wave Propagation**. It is a method of radio frequency propagation that uses the area between the surface of the earth and the ionosphere for transmission. Ground wave radio signal propagation is ideal for relatively short distance propagation on these frequencies during the daytime with a limited range of approx 30 km.

(m) **Tropospheric Scatter**. (Also known as troposcatter) It is a method of communicating with microwave radio signals over considerable distances – often up to 300 km and further depending on terrain and climate factors. Radio signals are transmitted in a narrow beam aimed just above the horizon in the direction of the receiver station. Communication distances are limited by the visual horizon to around 30–40 miles (48–64 km). Tropospheric scatter is a fairly secure method of propagation as dish alignment is critical, making it extremely difficult to intercept the signals, especially if transmitted across open water, making them highly attractive to military users.

Radio Communication involves Net Radio and Radio Relay.

Net Radio

Net radio is the basic means of signal communication for any mobile force. Efficiency of net radio communication is appreciably affected by factors such as weather, terrain, power output of the set, state of training of operators and equipment maintenance. It provides facilities for the following :-

(n) **Radio Telephony** – Simple one way voice communication, depending on the type of equipment available.

(o) **Radio telegraphy** for transmission of message and key conversations.

(p) **Tele printers** over radio transmission.

Advantages.

(q) Vulnerable only at terminal and is therefore reasonably protected from enemy action except by a direct hit.

(r) Flexible hence can be rapidly re-arranged in the event of regrouping.

(s) Rapid in establishing communication.

(t) Works on the move although range obtained will be much less than when stationary.

(u) Economical in personnel and equipment.

Disadvantages.

(v) Inherently insecure and susceptible to enemy interception which necessitates the use of codes and ciphers with a consequent delay in clearing traffic and overall increase in operating personnel.

(w) Net radio being inherently insecure demands a considerable degree of security consciousness on the part of the users. This means adherence to standard procedure and security codes.

Radio Relay

Radio relay implies that a series of radio transmitters and receivers normally spaced between 20-35 Kms apart and are used to provide point signal communication.

Advantages.

(x) Replace line with considerable economy of manpower and stores.

(y) It can be operated over area where for reasons of ground or enemy activity use of line may not be possible.

(z) Provides greater flexibility than line.

(aa) Quick to set up and move except in mountainous country.

(bb) By its ability to employ multichannel equipment radio relay provides more tele-printer circuits over one link than can normally be provided over the average field cable. Thus it has much greater traffic handling capacity.

Disadvantages.

(a) Liable to interception and hence insecure. Has relatively greater security than net radio, depending upon the sitting and direction of the beams.

(b) Liable to interference from enemy jamming although not as much as in the case of net radio.

(c) Terrain between stations must be reasonably suitable to get a 'quasi optical path', this presents difficulty in sitting.

(d) Location of terminal and intermediate stations may not suit tactical layout and may, therefore, create additional protection requirements.

(e) It cannot work on the move.

(f) Slightly more expensive in men and material than in the case of net radio.

(g) Needs critical sitting.

Conclusion

Communication has made a remarkable impact in our life and changed it many folds. Both the line and the radio communication have provided us with several advantages to make our life more comfortable. Telecommunications has greatly altered communication by providing new media for long distance communication. Therefore, it is important for one to understand the nuances of the communication set u

CHAPTER - II

CHARACTERISTICS OF WIRELESS TECHNOLOGY (MOBILE, WI-FI ETC.)

Introduction

The development on Wi-Fi technology began in 1997 when the Institute of Electrical and Electronic Engineers (IEEE) introduced the 802.11 technologies that carried higher capacities of data across.

Wi-Fi provides its users with the liberty of connecting to the internet from any place such as their home, office or a public place without hassles of plugging in the wires. It is quicker than the conventional modem for accessing information over a large network. Wi-Fi use radio network to transmit data between its nodes. Such networks are made up of cells that provide coverage across the network. The more the number of cells, greater and stronger is the coverage on the radio network.

features of wi-fi technology

Features of Wi-Fi

Wireless operations permit services, such as a long-range communications, which are impossible or impractical to implement with the use of wires. Information is transferred in this manner over both short and long distances.

The following list summarizes some of the benefits of a Wi-Fi network

(a) **Unmatched mobility and elasticity.** Wi-Fi, is allowing the new intensity of connectivity without giving up functions. Wi-Fi introduced various types of utilities such music streamers that transmit your music to speakers without any wire you can also play music from the remote computer or any other attached to the network. The most important now you can play online radio. Wifi technology system is rather remarkable, you can download songs, send an email and transfer files expediently at sky-scraping speed and you can move your computer easily because your WiFi network has no cable to disrupt your work so we can say that it is quite easy, helpful and most of all expedient.

(b) **Fortress Technology**Wi-Fi providing secure wireless solutions support the growth and release of a prototype mobile ad hoc wireless network for use in the wireless strategic skirmish.

(c) **Support an Entire Age Bracket.** Wi-Fi technology has several advantages, it supports an entire age bracket and create a connection between components on the same network and have the ability to transfer data between the devices and enable different kinds of devices such as game, MP3 player, PDA's and much more!

(d) **Convenient and Available Everywhere.** Wi-Fi is a convenient technology and where the network range station exists you are online during travel; you can equip with a Wi-Fi network and get connected. You will automatically connect to the internet if you are near a hotspot. These days WiFi exist everywhere with all its wonders.

(e) **Faster and Secure** With Wi-Fi, you can get a high speed of internet because it is very fast than DSL and Cable connection you can establish a Wi-Fi network in small space now you don't need any professional installation just connect to a power outlet with an Ethernet cord, and start browsing. Wi-Fi security system for Threats makes it more renewable and its tool protect your VPN and secure web page. You can easily configure the device to take better performance. The standard devices, embedded systems, and network security make it more powerful.

(f) **Wi-Fi with no limitation** You can use a "Wi-Fi" network with no limitation because it can connect you worldwide. You can easily cater to your requirements with Wi-Fi networking applications because the power consumption is not very high as compared to another bandwidth networks. The future of wireless internet network communications is bright.

(g) **Extension of Wi-Fi Technology** It is because of this wireless technology that so many other advancements could take place. Have you even thought of your TV to be supported by WI-FI? Well if you didn't, start thinking now. There are smart TV's in a market that connects to the internet. Having the internet on TV makes it possible to watch you tube videos, Net Flix and so much more. Read more about Wi-Fi TV technology on World Wide Web for more information

(h) **Cost Reduction**. As mentioned above, the absence of wires and cables brings down cost.

(i) **Flexibility**. Extended access, cost reductions, and mobility create opportunities for new applications as well as the possibility of creative new solutions for legacy applications.

Terminal Equipment And Limitations Of Wi-Fi

Mobile Telephones

One of the best-known examples of wireless technology is the mobile phone, also known as a cellular phone, with more than 4.6 billion mobile cellular subscriptions worldwide as of the end of 2010.These wireless phones use radio waves from signal-transmission towers to enable their users to make phone calls from many locations worldwide.

Wireless Data Communications

Wireless data communications are an essential component of mobile computing. The various available technologies differ in local availability, coverage range and performance, and in some circumstances, users must be able to employ multiple connection types and switch between them.

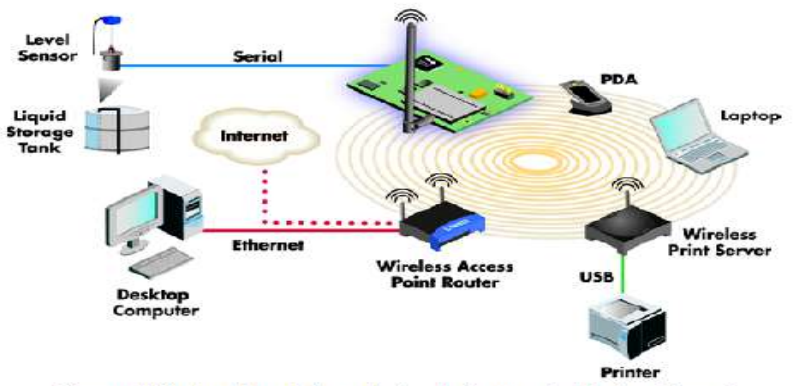


Figure: Wireless Local Area Network Connected to the Internet

Wi-Fi technology is not perfect and has many flaws that limit its use as follows:

(a) **Security**. Because wireless transmissions can pass through walls, security is an issue.

(b) **Wireless Reception**. Varies from area to area, even within your own apartment. It's not always guaranteed that you'll have a connection to the Internet.

(c) **Interference**. Call quality is greatly influenced by the environment, is particularly sensitive to electromagnetic radiation generated by other household appliances.

(d) **Compatibility Issue**. Despite the global standardization, many devices from different manufacturers are not fully compatible, which in turn affects the speed of communication

Conclusion

The environment is flooded with various Wi-Fi software tools. Each of these tools is specifically designed for different types of networks, operating systems and usage types. It is imperative for users to have a good detailed knowledge about this latest technology and pick out a Wi-Fi software tool that is compatible with their computer and its dynamics. Through the Wi-Fi hotspot, the users can even enhance their home business, as accessing information through Wi-Fi is simple.

CHAPTER - III

CHARACTERISTICS OF WALKIE /TALKIE

Introduction

A Walkie/Talkie (formally known as a hand held transceiver) are a hand-held, portable, two-way radio transceiver. Its development during the Second World War is credited to Donald L. Hings, radio engineer Alfred J.Gross, and engineering teams at Motorola. Where a phone's ear piece is only loud enough to be heard by the user, a walkie-talkie's built-in speaker can be heard by the user and those in the user's immediate vicinity. Hand-held transceivers may be used to communicate between each other, or to vehicle-mounted or base station.

Radio set GP338 Motorola. Defence organizations use hand held radios for a variety of purposes. Radio Set Gp338 Motorola can communicate on a variety of bands and modulation schemes.

Facilities/ Features

FACILITIES.

(a) It is portable and light in weight.
(b) Can be operated easily.
(c) It can be operated in VHF/UHF and 2 way simplex mode.
(d) 128 channel of this radio set can be preset into 8 zone.
(e) Option of selective call facilities available.
(f) Call alert can be given to receiver station.
(g) Can select required zone.
(h) Start/stop facilities of scan operation available.
(i) Add/Delete from scan list facilities available.

Weight and Measure. Weight and measure of this radio set is as follows:

(a) Dimension with Nickel Metal-Hydride high capacity battery-137x57.5x37.5mm.
(b) Weight with Nickel Metal-Hydride high capacity battery-420gm.

Frequency Range. Frequency of this radio set is as under:-

(a) 136 MHz to 174 MHz on VHF mode.
(b) 403 MHz to 470 MHz on UHF mode.

Communication Range. Communication range of this radio set is 4 to 5 Km and 20 to 40 Km with repeater.

Power Supply. Power supply can be provided to this radio set by the high capacity 7.2 volt batteries.

Battery Charging Time. 1 hour for high capacity 7.2 volt batteries.

(a) Power output (HF) 1 to 5W att.

(b) Power output (UHF) 1 to 4 Watt.

Handling Of Walkie/Talkie

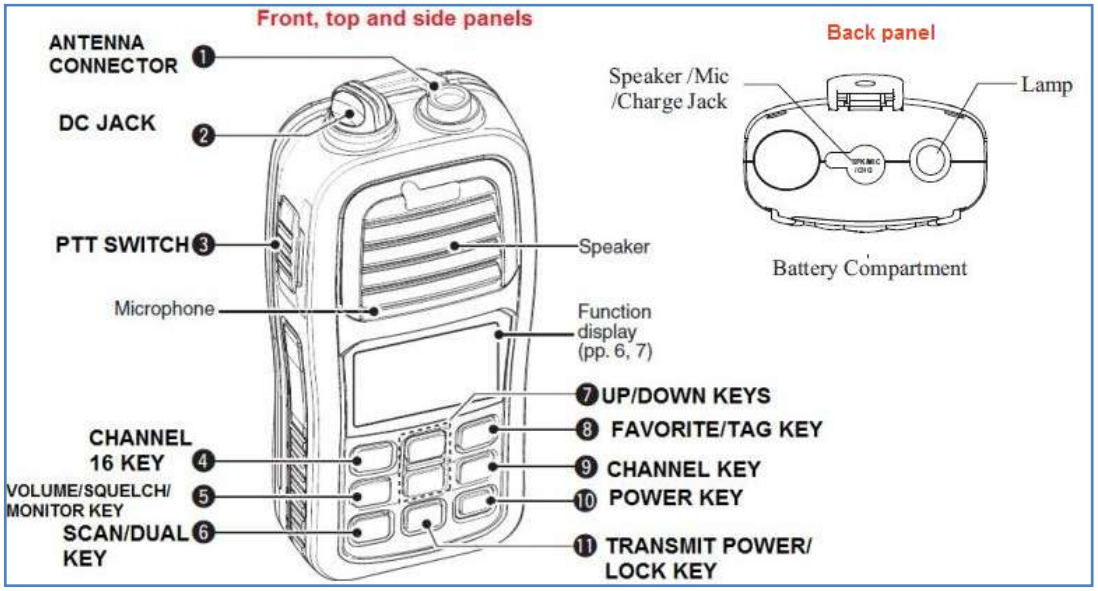
Model (Shape). This radio set has been divided into four portions.

(a) Top Panel.

(b) Side Panel.

(c) Front Panel.

(d) Back Panel.



Top Panel. Contains On/Off Volume Knob, Channel Selector Knob, Top Button and Antenna

Side Button. Name and functions of the large control on side panel is Press to Talk Switch and Right Side Accessory Mount.

Front Panel. There are a total of six buttons i.e. Exit Key, Up Key, and Menu Select Key. Front Panel Key Pad. This is an alphanumeric keypad. There are 10 keys on this pad from 0 to 9. One key star and one extract key. LCD Display. This is a 14-character LCD display window and 14 types of indicators are displayed.

Back Panel. The battery is fixed on this back panel of radio.

Conclusion

Walkie –Talkies were created for armed forces to operate in field areas and also for internal security during peace time. However, seeing their effectiveness, utilization, user friendly features, walkie-talkies have been spread to public and private sectors for public safety and also for commercial and jobsite work. Therefore, it is very important for cadets to understand the essential features, functioning and importance of this technology.

CHAPTER - IV

BASIC RADIO TELEPHONY (RT) PROCEDURE

Introduction

The procedure is laid out to communicate on the Radio so as to make the conversation secure and successful, which is referred to as "Radio Telephony". This procedure is very important to avoid utter confusion over radio and is generally used by defence forces, air traffic controllers, maritime operators and amateur radio operators. Various advantages/disadvantages of RT procedure and radio communications are as under:-

(a) **Advantages**.

(i) Easy to establish

(ii) Flexible.

(iii) Transmissions to more than one station.

(b) **Disadvantages**.

(i) Easier to intercept.

(ii) Liable to atmospheric interference and interferencefrom other stations.

(iii) Liable to be jammed.

(iv) Skilled operators required.

Need for Standard Procedure. Standard procedure in RT needed to attain speed, uniformity, security and prevents misunderstanding & confusion by use of code signs, link signs etc. which hides identity of an operator and that of a unit.

Principles of Radio Telephony Procedure. BASS defines the Principles of RT procedure.

(a) B – Brevity

(b) A – Accuracy

(c) S – Security

(d) S - Speed

Types of Rt Communication

RT Conversation. This is normal conversation between radio operators, which is not registered.

Unregistered (UR) Message. The only record taken will be in radio operator's logs of the sender and receiver.

Formal Message. It is written down and signed by the originator will be written on a message form (IAFU-4009).

Definitions

Radio Net. Stations working on same frequency in order to communicate with each other comprise a Radio Net.

Control Station. Station serving as the senior HQ in the Radio Net. It is responsible for establishment of communications and maintains radio discipline on the net.

Link Sign. It is secret group of letters or combination of letters and figures, allotted to a station on radio net, for concealing the identity of the communicating station. Link signs are changed daily or even earlier if required.

Code Sign. It is three-letter group allotted to HQ/formation or unit to conceal their identity. These are changed daily.

Long Message. Message that lasts for more than half a minute generally consists of more than thirty groups.

Short Message. A short message lasts for half a minute or less.

Phonetic Alphabet. Alpha, Bravo, Charlie…

Standard Phrases. Use of standard procedure ensures that exact meaning of a sender is conveyed to the receiver in minimum time.

Code Word. A code word is a single word used to provide security cover for reference to a classified matter.

Nicknames. A nick name consists of two separatewords that do not bear any relationship to each other i.e. PAHAD BANDAR. Nick names have very little security value and are used for convenience.

RT Procedure

Standard Phrases. Standard phrases used in RT procedure are as under:-

(a) **Over**. My transmission has ended and I expect to hear a further transmission from you on this subject. Other stations will not transmit.

(b) **Out**. My transmission has ended and I do not expect you to make a further transmission on the subject. Other stations may transmit.

(c) **Wait Out**. You have finished for the time being and will call you later. Other stations may transmit.

(d) **Wait**. Pause for a few seconds follows. Other stations will not transmit.

(e) **Out to You**. I have finished with you and am about to call another station. No reply is expected from you. Other stations will not transmit.

(f) **Roger**. Message received and understood.

(g) **Wilco**. Message received, understood and will be complied with.

Types of Calls Calls can be categorised as under:-

(a) **Single Call**. A call when only one station on a net is addressed by anyone station of the net.

(b) **Multiple Calls**. A call when two or more but not all stations on the net are addressed. The pro word "and" will be inserted between the last two call signs e.g. `A1 for A2 and A3'.

(c) **Net Call**. A call used to address all stations on a net e.g. "Allstations Alpha".

(d) **Net Call with Exceptions**. A call used to address all stations on the net except a few. Here a net call is made and stations not called are specified e.g. "all stations Alpha except ABC 3".

Establishment of Communication. Preliminary instructions are issued by Control. They are not sent by radio unless in dire emergency. On establishment of communications, signal strength will always be confirmed. Link signs will not be abbreviated in bad weather conditions. If a station has not come up during establishment of communication but comes up little later, communication will be again established. Signal communication will always be established in the following situations:-

(a) After change of frequency.

(b) Bad weather.

(c) After move.

(d) After lifting of radio silence.

(e) After change of link sign.

Documentation. Documentation forms a very important aspect of RT procedure. All events need to be documented for future reference in case of a query.

Rules on Security. Security over radio is an important issue in defence forces hence there is a need to adopt these procedures and follow certain golden rules.

(a) Think before you speak.

(b) Use correct procedure.

(c) Avoid use of jargon.

(d) Use official codes only.

(e) Substitute clear names by code signs.

(f) Be brief

Practice

The cadets will be given adequate practice on RT procedure.

Conclusion

Proper Radio Telephony procedure is essential to establish communication both during war n peace time. There are certain advantages and disadvantages of RT procedure. The messages can be intercepted by enemy and the complete information can be retrieved especially during field conditions. Considering the same one must follow all the rules of security while communicating.

CHAPTER – V

LATEST TRENDS AND DEVELOPMENT IN COMMUNICATION

Introduction

Control of the battle has always been the concern of the commanders down the ages and whoever could exert better control over his own forces and impress his will on the men won. When the armies were small and the distances relatively shorter, messengers on foot or on horseback were enough. However, when the battlefields stretched out and the size of armies increased, such means no longer sufficed. The coming of artillery also underscored the importance of communications. Necessity being the mother of invention, such changes in the battlefield drove the evolution and adoption of modern technologies. The field of communication has seen rapid growth during the last century. Various forms of communication media have been discovered. The medium of space has acquired special importance and communications are being carried out using various layers of the atmosphere.

Tropo Scatter, Modem, Fax, Telex

Tropo scatter

The lower layer of the atmosphere below 15 Km height is called tropospheric region. Communication carried out in this layer use the principle of troposcatter. In this system micro waves are transmitted in the Ultra High Frequency (UHF) and Super High Frequency (SHF) band to achieve Radio Communication over the horizon covering a range between 70 Km to 1000 Km.

MODEM (Modular-Demodulator)

This device is used to convert computer generated output (Digital signals) that can be transmitted on a telephone line. Modems are required at both the sending and receiving computers.

FAX

This is common short form of FACSIMILE which is one of the memory type electronic mail and message systems with the following advantages:-

(a) Can transmit graphics as well as Alpha numeric information (letters and numbers).

(b) Reduce time and eliminates transmission error.

(c) Use any transmission medium eg. Telephone, line, micro radio wave.

TELEX

This is the abbreviated form of TELE PRINTER EXCHANGE. As cable is used in this type of communication devices to connect two such instruments it restricts its range of operation.

(a) **Advantage**.

(i) Re-generative repeaters in a network can increase range; however voice signal cannot be re-generated.

(ii) Can be used over a telephone network.

(iii) Can receive messages when unattended.

(iv) Message is recorded in a printer form.

(b) **Disadvantages**.

(i) The Equipment is costlier than a telephone set.

(ii) Key in error due to the need for a human operator to send-receive message.

(iii) Lack of privacy since any one can read the printed output.

Satellite

An object which revolves around another larger object whose motion is primarily and permanently determined by the force of attraction of the body is known as satellites. Before the space age, planets and moons were the only known satellites. On 4th October 1957 the first man made satellite called the SPUTNIK was launched by the erstwhile USSR. Since then more complex and versatile satellites have brought about a revolution in the field of communications. India launched its first Satellite **Aryabhatta** on 19th April 1975 from Kapustin Yar with the help of Soviet Union. Satellites are used for many purposes. Common types include military and civilian Earth observation satellites, communications satellites, navigation satellites, weather satellites, and space telescopes. Space stations and human spacecraft in orbit are also satellites. Satellite orbits vary greatly, depending on the purpose of the satellite, and are classified in a number of ways. Well-known (overlapping) classes include low Earth orbit, polar orbit, and geostationary orbit.

Types of Satellite.

(a) **Weather Satellite**. The weather satellite is a type of satellite that is primarily used to monitor the weather and climate of the Earth. Satellite scan be polar orbiting, covering the entire Earth asynchronously, or geostationary, hovering over the same spot on the equator.

GOES-8, a United States weather satellite of the Meteorological-satellite service.

(b) **Scientific Satellite**. Scientific research satellites provide meteorological information, land survey data (e.g. remote sensing), Amateur (HAM) Radio, and other different scientific research applications such as earth science, marine science, and atmospheric research.

An Advanced Extremely High Frequency communications satellite

(b) **Communication Satellite**.
A **communication satellite** is an artificial satellite that relays and amplifies radio telecommunications signals via a transponder; it creates a communication channel between a source transmitter and a receiver at different locations on Earth. Communications satellites are used for television, telephone, radio, internet, and military applications. There are over 2,000 communications satellites in Earth's orbit, used by both private and government organizations

(c) **Navigational Satellite** A satellite navigation or satnav system is a system that uses satellites to provide autonomous geo-spatial positioning. It allows small electronic receivers to determine their location(longitude, latitude, and altitude/elevation) to high precision (within a few metres) using time signals transmitted along a line of sight by radio from satellites. A satellite navigation system with global coverage may be termed a global navigation satellite system (GNSS).

(d) **Military Satellite**. A **military satellite** is an artificial satellite used for a military purpose. The most common missions are intelligence gathering, navigation and military communications. The first military satellites were photographic reconnaissance missions.

Optical Fibre Communication Computer System

Hollow tubes made of corning glass with an outer protective coating of rubber/plastic etc. are what constitute optical fibers. These fibers are very delicate and small in diameter.

(a) **Advantages**.

(i) It has wide band width carrying different types of information from low speed voice signal to high speed computer data.

(i) Less power requirement.

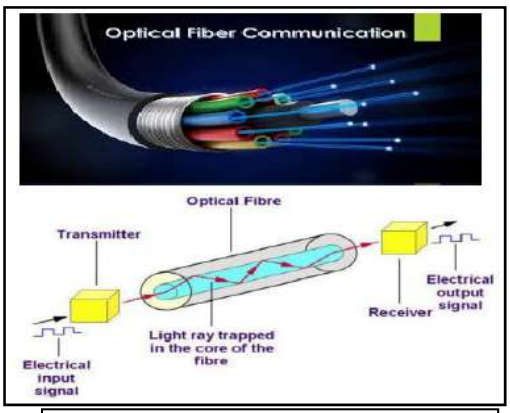
(ii) Small cable size.

(iii) No electromagnetic interference.

(b) **Disadvantages**.

(i) Expensive in terms of equipment and manufacturing.

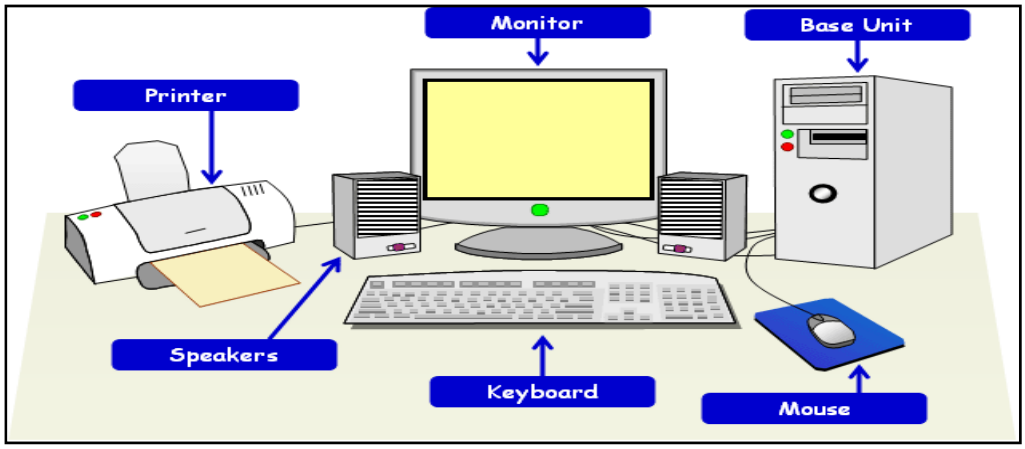
(ii) Requirement of experts to run the system



A model of a German SAR-Lupe reconnaissance satellite inside a Cosmos-3M rocket

Computer System

Strictly speaking a computer is any calculating device. The name is derived from a Latin word "Computer" meaning to reckon or compute. However, the term computer has come to mean a special type of calculating machine having certain characteristics.



(a) **Advantages**.

(i) Speed of process and calculations.
(ii) Accuracy of process and calculation once the programme is proved.
(iii) Persistence - It will continue on the same job until the end, always working in the same way, each and every day.
(iv) Mass storage of data.
(v) The ability to handle large volume of data.

(b) **Disadvantages**.

(i) Data loss if machine malfunctions.
(ii) Back up hard data still required to be maintained.
(iii) Constant power source is required.

Internet

Millions of computers all over the world are interlinked through telephone lines, satellites, submarine cable and optical fiber network. This World Wide Web (www) is what is called the "Internet". It provides an instant, trouble free and cheap means of communications. Internet is therefore a collection of individual data networks connected together in such a way that data can be exchanged back and forth between networks widely separated.. Electronic Mail, Web- Browsing and Voice Mail are the main facilities of internet.

Cell Phone

Cellular radio network was first introduced in 1980. It provides a mobile subscriber access to the global telephone network. It is a rapidly expanding technology with high rates of obsolescence.

(a) **Advantages**.

(i) More subscriber and traffic capability.
(ii) No perceptible difference between mobile and fixed subscribers.
(iii) Better quality of service.
(iv) Higher speed of data exchange.
(v) Can be used in an integrated mode with computer network.

(b) **Disadvantages**.

(i) Open source. It can be jammed if required.

(ii) Repeated charging of battery.

(iii) Security related issues.

(iv) Works on the capability and commercial interests of service provider.

(v) Health hazards due to excessive radiations.

Multimedia

It is a computer technology that displays information using a combination of full motion video animation, sound graphics and text with high degree of user interaction.

Video-Conferencing Systems

These provide the full benefits of face to face communication with sound, graphics and simultaneous transmission of data. The system enables people widely separated geographically to inter- act without having to meet at one place.

Videophone

It is a system that enables us to transmit an image via digital tele network, making visual contact has been made possible over great distances, apart from transferring speech. Facilities provided by videophone are:

Indian Navy Summit conducted by Video Conferencing system

(a) Can transmit speech as well as colour video.

(b) Conduct of video conferences.

(c) Called subscriber is seen on the monitor.

(d) High quality of voice.

(e) Speed of sending/ receiving can be adjusted by the user.

(f) Map over-lays can be transmitted.

Information Technology

Information Technology or IT for short, refers to the creation, gathering, processing, storage, presentation and dissemination of information, and also the processes and devices that enable all this to be done. IT stands firmly on the hardware and software of a computer and the telecommunications infrastructure. Computers, as we all know, have been in existence for over 50 years. For many of these years, they had been primarily used for information processing. It is well known that year-by-year, computers are becoming more and more powerful both in terms of their computational speeds and also their capacities for storing of data. What has made the big difference in recent years is not the fact that individual computers have dramatically improved in their capabilities, but that all those information islands are being connected by digital highways made possible through the use of the telecommunications infrastructure by the computers, which, largely explains why the internet and the WWW have begun to play such a significant role in our use of computers.

Conclusion

Today the technology has advanced in all spheres of life. Even the defence forces are well poised to exploit the state-of-art modern communication techniques for meeting the requirements of the Indian Army in the 21st century. Some of the areas where the army is already in the process of exploiting are the Cellular Radio (both GSM & CDMA), WLL, mobile trunked radio, mobile satellite systems, OFC and so on. Therefore, it is very important to be well versed with the latest trends in information technology to gain maximum advantage from the same

Summary

- **Line.** This is the basic means of signal communications for a force which is static.

- **Radio Communication.** Radio communication involves Net Radio and Radio Relay. Net radio is the basic means of signal communication for any mobile force.

- **Radio Relay.** Radio relay implies that a series of radio transmitters and receivers normally spaced between 20-35 Kms apart and are used to provide point signal.

- **Wireless.** Wireless operations permit services, such as a long-range communications, that are impossible or impractical to implement with the use of wires.

- **Mobile Telephones.** These wireless phones use radio waves from signal-transmission towers to enable their users to make phone calls from many locations worldwide.

- **Wireless Data Communications.** Wireless data communications are an essential component of mobile computing. The various available technologies differ in local availability, coverage range and performance.

- **Wi-Fi.** Wi-Fi is a wireless local area network that enables portable computing devices to connect easily to the Internet. Wi-Fi has become the de facto standard for access in private homes, within offices, and at public hotspots. Cellular data service offers coverage within a range of 10-15 miles from the nearest cell site.
- A walkie-talkie is a hand-held, portable, two-way radio transceiver.

- **Radio Telephony.** The procedure laid out to communicate on the Radio so as to make the conversation secure and successful, which is referred to as “Radio Telephony”.
- Principles of Radio Telephony Procedure.
  - B – Bravity
  - A – Accuracy
  - S – Security
  - S – Speed
- Types of communication
  - RT conversation
  - Unregistered (UR) Message
  - Formal Message

- Types of Calls.
  - Single Call.
  - Multiple Call
  - Net Call.
  - Net Call with Exceptions

- Troposcatter is a system in which micro waves are transmitted in the UHF and SHF band to achieve radio communication over the horizon covering a range between 70 Km to 1000 Km.

- Modem (modulator-demodulator) is a network hardware device that modulates one or more carrier wave signals to encode digital information for transmission and demodulates signals to decode the transmitted information.

- A satellite is an artificial object which has been intentionally placed into orbit. Such object is sometimes called artificial satellite to distinguish them from natural satellites such as Earth’s Moon.

- Satellites are used for a large number of purposes. Common types include military and civilian earth observation satellites, communications satellites, navigation satellites, weather satellites, and research satellites.

- Multimedia is content that uses a combination of different content forms such as text, audio, images, animation, video and interactive content. Multimedia contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material.
- Video conferencing (VC) is the conduct of a video conference (also known as a video conference or video teleconference) by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions.

- Information technology (IT) is the application of computers and internet to store, retrieve, transmit, and manipulate data or information often in the context of a business or other enterprise.

COMPREHENSIVE QUESTIONS

Q1. Answer the following in about 15 words:

(a) What is Radio Telephony?

(b) What is a Single Call?

(c) What is a Code Sign?

(d) What is a Radio Net?

(e) What is a Walkie Talkie?

(f) What is the use of Videophone?

Q2. Answer the following in about 50 words:

(a) What do you mean by Line communication?

(b) What do you mean by Radio Relay?

(c) What do you mean by Net Call with Exception?

(d) What is a Multiple Call?

(e) What do you understand by Information Technology?

Q3. Answer the following in about 75 words:

(a) What are the characteristics of wireless technology?

(b) What are the wireless data communications used in army?

(c) Discuss about Wi-Fi technology in modern communication system.

(d) What are the principles of Radio Telephony?

(e) What do you understand by Military Satellite?

Q4. Answer the following in about 150 words:

(a) What are the advantages and disadvantages of Line Communication?

(b) What are the advantages and disadvantages of Net Radio?

(c) What are the advantages of Optical Fibre Cable?

(d) What are aids to Security in Radio Telephony?

(e) What are the different kinds of calls?

(f) Name the number of buttons/keys on front panel programming button with functions in RS GP338 MOTOROLA.

(g) Explain the concepts, latest trends and development in communication. List and brief about any 4 communication devices.

Q5. Answer the following in about 250 words:

(a) Draw a diagram of wireless technology and explain the parts with example.

(b) Draw diagram the Wi-Fi technologies and explain with examples.

(c) Explain types of satellites.