

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior Secondary School Examination, 2026 (XIIth)
SUBJECT NAME: Electronics & Hardware (Q.P. CODE 847/371)

General Instructions: -

1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, evaluation done and several other aspects. Its leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in Newspaper/Website, etc. may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In Class-XII, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
4	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark (✓) wherever answer is correct. For wrong answer CROSS ‘X’ be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totalled up and written in the left hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.

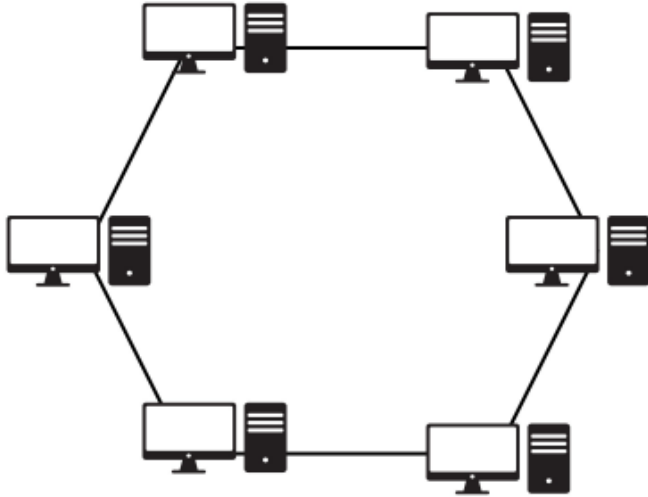
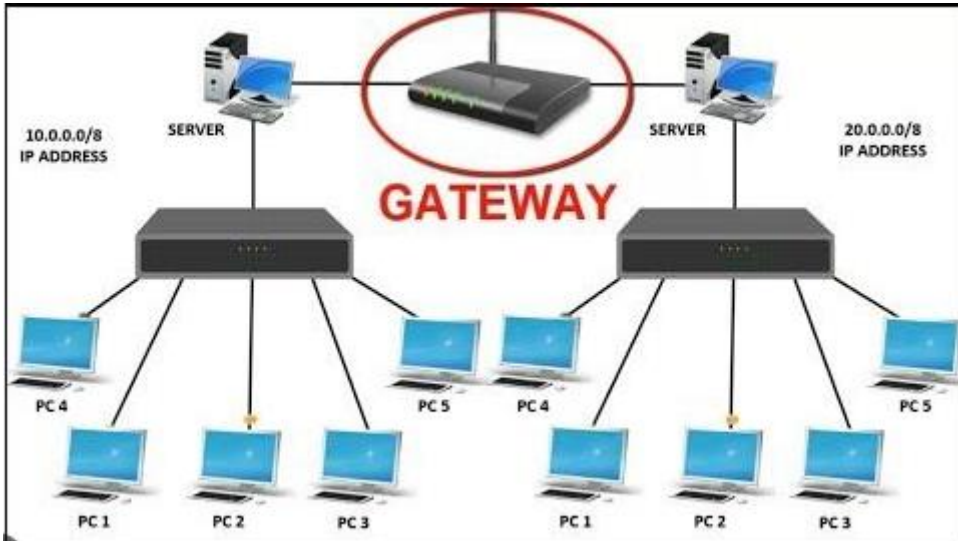
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note " Extra Question "
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks _____ (example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
13	Ensure that you do not make the following common types of errors committed by the Examiner in the past :- • Leaving answer or part thereof unassessed in an answer book. • Giving more marks for an answer than assigned to it. • Wrong totalling or marks awarded on an answer. • Wrong transfer of marks from the inside pages of the answer book to the title page. • Wrong question wise totalling on the title page. • Wrong totalling of marks of the two columns on the title page. • Wrong grand total. • Marks in words and figures not tallying/not same. • Wrong transfer of marks from the answer book to online award list. • Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) • Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	Any unassessed portion, non-carrying over of marks to the title page, or totalling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also as the Board. Hence, in order to upload the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the " Guidelines for Spot Evaluation " before starting the actual evaluation.
17	Every examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totalled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

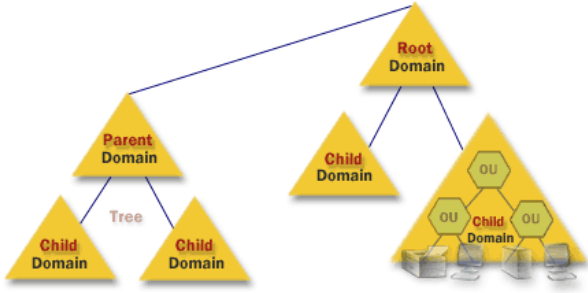
MARKING SCHEME
Electronics & Hardware (Subject Code - 847)
(PAPER CODE : 371) (P3710847)

Q.No.	EXPECTED OUTCOMES/VALUE POINTS	Unit	Pg No.	Marks
	SECTION – A (Objective Type Questions)			
	Answer any 4 out of the given 6 questions on Employability Skills.			4x1=4
1.	(i) (b) A group of words that communicates a complete thought or meaning.	Unit 1	Pg. 9	1
	(ii) Stress is a state of feeling upset, annoyed and hopeless.	Unit 2	Pg. 26	1
	(iii) (a) Suspicious	Unit 2	Pg. 34	1
	(iv) (b) Information and Communication Technology	Unit 3	Pg. 39	1
	(v) (d) Work area	Unit 4	Pg. 42	1
	(vi) 'Startup India'	Unit 5	Pg. 89	1
	Answer any 5 out of the given 7 questions.			5x1=5
2.	(i) (b) LAN (ii) (d) Data link layer (iii) True (iv) (c) Router (v) (a) Ethernet switches (vi) (b) Advanced Research Projects Agency Network (vii) False			1 1 1 1 1 1 1
	Answer any 6 out of the given 7 questions.			6x1=6
3.	(i) (c) Active Directory (ii) (b) Domain Controller (iii) False (iv) (c) Trees (v) (a) Default Domain Controller Policy (vi) (d) Containers (vii) True			1 1 1 1 1 1 1
	Answer any 5 out of the given 6 questions.			5x1=5
4.	(i) (b) .personal.txt (ii) False (iii) (b) id (iv) (c) Metadata (v) (b) Cat			1 1 1 1 1

	(vi) True			1
	Answer any 5 out of the given 6 questions.			5x1=5
5.	(i) (c) Man-in-middle attack (ii) (d) Turn on automatic update in setting (iii) True (iv) (a) Group Policy (v) (a) Port Scanning (vi) (d) Proxy Firewall			1 1 1 1 1 1
	Answer any 5 out of the given 6 questions.			5x1=5
6.	(i) (c) 5 (ii) True (iii) (d) Auditors (iv) (a) Internal (v) (a) 26 and 4 (vi) (c) Known Error			1 1 1 1 1 1
	SECTION – B (Subjective type questions)			
	Answer any 3 out of the given 5 questions on Employability Skills in 20-30 words each.			3x2=6
7.	Communication is a two-way process through which information or message is exchanged between individuals using language, symbols, signs or behaviour. Speaking, listening, reading and writing are the parts of communication.	Unit 1	Pg. 1	2
8.	1. Openness – Individuals are creative, curious, active, flexible and adventurous. 2. Consciousness – self-disciplined, work on time, take care of others. 3. Extraversion – love to interact with people. 4. Agreeableness – kind, sympathetic, cooperative, considerate and warm. 5. Neuroticism – tendency towards anxiety, self-doubt, depression, shyness. any four	Unit 2	Pg. 33	0.5x4
9.	1. Sorting Data in IT refers to the process of arranging data elements in a specific order such as ascending or descending based on pre-defined criterion. 2. It helps in data organization, making it easier to search, analyze and process information efficiently.	Unit 3	Pg. 58	1x2
10.	Environmental barriers : 1. Lack of adequate resources or raw material 2. Non-availability of skilled labour 3. Lack of requisite machinery and infrastructure 4. Unavailability of monetary resources on time	Unit 4		2
11.	According to UNEP – United Nations Environment Program, green jobs or green collar jobs are works in agricultural, administrative, research and	Unit 5	Pg. 112	2

	development, manufacturing and service activities that contribute substantially to preserving or restoring environment quality.			
	Answer any 3 out of the given 5 questions in 20-30 words each.			3x2=6
12.	An Ethernet hub is a network device used to connect different devices through wires. Data arriving on any of the lines are sent out on all the others. The limitation of Hub is that if data from two devices come at the same time, they will collide.			2
13.	• Robust command-line history • tab completion and command prediction • Supports command and parameter aliases • Pipeline for chaining commands • In-console help system, similar to Unix man pages (any four)			2
14.	In Linux and Unix-like systems, the superuser account, called 'root', is virtually omnipotent, with unrestricted access to all commands, files, directories, and resources. Root can also grant and remove any permissions for other users. Mac OS X, is Unix-like, but unlike Unix and Linux, is rarely deployed as a server.			2
15.	Encryption policies define when encryption should or shouldn't be used and the encryption technologies or algorithms that are acceptable. For example, a policy might mandate that specific proven algorithms such as 3DES, RSA, or IDEA be used and prohibit use of proprietary or nonstandard algorithms.			2
16.	ITIL core publications include a set of five manuals – Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Management.			2
	Answer any 2 out of the given 3 questions in 30-50 words each.			2x3=6
17.	• Aligning IT teams with business priorities tracked through success metrics • Enabling cross-department collaboration • Bringing IT teams and development teams together through streamlined project management approaches • Empowering IT teams to share knowledge and continuously improve • Improving request coordination for more efficient service • Promoting customer-centricity with self-service and better processes • Responding more quickly to major incidents, and preventing future ones			3
18.	Hardware Firewalls : On the other hand, hardware firewalls are physical devices, each with its computing resources. They act as gateways between internal networks and the internet, keeping data packets and traffic requests from untrusted sources outside the private network. Physical firewalls are convenient for organizations with many devices on the same network. While they block malicious traffic well before it reaches any endpoints, they do not provide security against insider attacks. Therefore, a combination of			3

	software and hardware firewalls can provide optimal protection to your organization's network.			
19.	In ring topology, each node is connected to two other devices, one each on either side, as shown in Figure. The nodes connected with each other thus forms a ring. The link in a ring topology is unidirectional. Thus, data can be transmitted in one direction only (clockwise or counter clockwise). 			3
	Answer any 3 out of the given 5 questions in 50-80 words each.			3x4=12
20.	Gateway : As the term “Gateway” suggests, it is a key access point that acts as a “gate” between an organisations network and the outside world of the Internet. Gateway serves as the entry and exit point of a network, as all data coming in or going out of a network must first pass through the gateway in order to use routing paths. Besides routing data packets gateways also maintain information about the host networks internal connection paths and the identified paths of other remote networks. If a node from one network wants to communicate with a node of a foreign network, it will pass the data packet to the gateway, which then routes it to the destination using the best possible route.  For simple Internet connectivity at homes, the gateway is usually the Internet Services Provider that provides access to the entire Internet. Generally, a router is configured to work as a gateway device in computer networks. But a gateway can be implemented completely in software, hardware, or a			4

	combination of both. Because a network gateway is placed at the edge of a network, the firewall is usually integrated with it.			
21.	AD DS organizes data in a hierarchical structure consisting of domains, trees, and forests, as detailed below.  • Domains : A domain represents a group of objects such as users, groups, and devices, which share the same AD database. You can think of a domain as a branch in a tree. A domain has the same structure as standard domains and sub-domains, e.g. yourdomain.com and sales.yourdomain.com. • Trees : A tree is one or more domains grouped together in a logical hierarchy. Since domains in a tree are related, they are said to “trust” each other. • Forest : A forest is the highest level of organization within AD and contains a group of trees. The trees in a forest can also trust each other, and will also share directory schemas, catalogs, application information, and domain configurations. • Organizational Units : An OU is used to organize users, groups, computers, and other organizational units. • Containers : A container is similar to an OU, however, unlike an OU, it is not possible to link a Group Policy Object (GPO) to a generic Active Directory container.			4
22.	A Linux file system is a structured collection of files on a disk drive or a partition. A partition is a segment of memory and contains some specific data. In our machine, there can be various partitions of the memory. Generally, every partition contains a file system. Linux file system has a hierarchal file structure as it contains a root directory and its subdirectories. All other directories can be accessed from the root directory. A partition usually has only one file system, but it may have more than one file system. A file system is designed in a way so that it can manage and provide space for non-volatile storage data. All file systems required a namespace that is a naming and organizational methodology. The namespace defines the naming process, length of the file name, or a subset of characters that can be used for the file name. It also defines the logical structure of files on a memory segment, such as the use of directories for organizing the specific			4

	files. Once a namespace is described, a Metadata description must be defined for that particular file. Some key features of Linux file system are as following : • Specifying paths : Linux does not use the backslash (\) to separate the components; it uses forward slash (/) as an alternative. For example, as in Windows, the data may be stored in C:\ My Documents\Work, whereas, in Linux, it would be stored in /home/My Document/Work. • Partition, Directories, and Drives : Linux does not use drive letters to organize the drive as Windows does. In Linux, we cannot tell whether we are addressing a partition, a network device, or an “ordinary” directory and a Drive. • Case Sensitivity : Linux file system is case sensitive. It distinguishes between lowercase and uppercase file names. Such as, there is a difference between test.txt and Test.txt in Linux. This rule is also applied for directories and Linux commands. • File Extensions : In Linux, a file may have the extension ‘.txt,’ but it is not necessary that a file should have a file extension. While working with Shell, it creates some problems for the beginners to differentiate between files and directories. If we use the graphical file manager, it symbolizes the files and folders. • Hidden files : Linux distinguishes between standard files and hidden files, mostly the configuration files are hidden in Linux OS. Usually, we don’t need to access or read the hidden files. The hidden files in Linux are represented by a dot (.) before the file name (e.g., .ignore). To access the files, we need to change the view in the file manager or need to use a specific command in the shell.			
23.	(a) DoS attack : A Denial-of-Service (DoS) attack is an attack meant to shut down a machine or network, making it inaccessible to its intended users. DoS attacks accomplish this by flooding the target with traffic, or sending it information that triggers a crash. (b) Phishing attack : Phishing is a type of social engineering attack often used to steal user data, including login credentials and credit card numbers. It occurs when an attacker, masquerading as a trusted entity, dupes a victim into opening an email, instant message, or exit message. (c) Man in the middle attack : A man in the middle (MITM) attack is a general term for when a perpetrator positions himself in a conversation between a user and an application – either to eavesdrop or to impersonate one of the parties, making it appear as if a normal exchange of information is underway.			4
24.	IT service management IT service management – often referred to as ITSM – is simply how IT teams manage the end-to-end delivery of IT services to customers. This includes			4

	all the processes and activities to design, create, deliver, and support IT services. The core concept of ITSM is the belief that IT should be delivered as a service. A typical ITSM scenario could involve asking for new hardware like a laptop. You would submit your request through a portal, filling out a ticket with all relevant information, and kicking off a repeatable workflow. Then, the ticket would land in the IT team's queue, where incoming requests are sorted and addressed according to importance. Due to their day-to-day interactions with IT, people often misconstrue ITSM as basic IT support. On the contrary, ITSM teams oversee all kinds of workplace technology, ranging from laptops, to servers, to business-critical software applications. There is a common line of thinking in the IT industry that posits that a proper approach to ITSM should follow three steps in this order : (1) Build and implement IT technology. (2) Bring in and enforce the right process. (3) People can learn the technology and abide by the process. The importance of ITSM • Aligning IT teams with business priorities tracked through success metrics • Enabling cross-department collaboration • Bringing IT teams and development teams together through streamlined project management approaches • Empowering IT teams to share knowledge and continuously improve • Improving request coordination for more efficient service • Promoting customer-centricity with self-service and better processes • Responding more quickly to major incidents, and preventing future one			
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