

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior Secondary School Examination, 2026 (XIIth)
SUBJECT NAME : Electronics Technology (Q.P. CODE 820/344)

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 uphold 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 Technology (Subject Code-820)
(PAPER CODE : 344) (P3440820)

Q.No.	Question	Unit/ Chap. No.	Page No.	Marks
	SECTION – A : OBJECTIVE TYPE QUESTIONS			
1.	Answer any 4 out of the given 6 questions on Employability Skills			(1x4=4)
(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)	‘Start up India’	Unit 5	Unit 89	1
2.	Answer any 5 out of the given 7 questions.			(5x1=5)
(i)	(D) Covid – 19			1
(ii)	Protection from harm, danger, accident or injury			1
(iii)	(C) Cardiopulmonary resuscitation			1
(iv)	True			1
(v)	(A) Try to pull the victim away from wire			1

(vi)	False			1
(vii)	The identification of hazards and its associated effects on the health is called anticipation.			1
3.	Answer any 6 out of the given 7 questions.			(6x1=6)
(i)	True			1
(ii)	It is usually used in public meeting, tape recorders etc., mobile phones			1
(iii)	dynamic loudspeaker			1
(iv)	(D) 1808			1
(v)	(D) Crystal microphone			1
(vi)	(B) DC source			1
(vii)	(D) very low and very high frequency			1
4.	Answer any 5 out of the given 6 questions.			(5x1=5)
(i)	(C) Ferric oxide			1
(ii)	(A) DVD			1
(iii)	(C) Optical system			1
(iv)	(D) Multiplexer			1
(v)	(B) DVD			1
(vi)	False			1

5.	Answer any 5 out of the given 6 questions.			(5x1=5)
(i)	(C) pulse code modulated infra red light			1
(ii)	(B) 3			1
(iii)	(C) TV Tuner			1
(iv)	RF amplifier			1
(v)	Tuner is device used widely in VHF/UHF ranges to select specific range of frequency called channel.			1
(vi)	(A) Differentiator			1
6.	Answer any 5 out of the given 6 questions.			(5x1=5)
(i)	(D) Clean mirror and glass			1
(ii)	(A) Aluminium			1
(iii)	(B) Magnetron			1
(iv)	(C) Charge coupled device			1
(v)	(A) Loop			1
(vi)	False			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 – 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	Unit 2	Pg. 33	(0.5x4) any four

	and warm. 5. Neuroticism – tendency towards anxiety, self doubt, depression, shyness.			
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		1x2=2
11.	According to UNEP – United Nations Environment Program, green jobs or green collar jobs are works in agricultural, administrative, research and development, manufacturing and service activities that contribute substantially to preserving or restoring environment quality.	Unit 5	Pg. 112	2
	Answer any 3 out of the given 5 questions in 20 – 30 words each.			(3x2=6)
12.	HF biasing is used in all cases of magnetic analog sound recording. Function of HF biasing is fairly complex, but easily adjusted in optimum performance. In HF biasing positive and negative parts of the transfer characteristics are used for recording the audio signal and HF also have low noise and biasing of HF usually occur at 100 kHz.			2
13.	- Fax machine is dead - Printed Image is dirty - Fax does not receive - Paper jam problem - Scanning problem (any four)			$\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=2$
14.	It is concerned with the identification and control of the danger arising due to physical, chemical and other work places hazards to maintain a healthy working environment. The hazards may cause due to chemical agent, heavy metals, physical agents, electricity, dangerous machinery etc. The prime goal of existence of man power inside industry to get maximum output from their mental and physical health. Therefore the health of work force must be considered on the top of management agenda to ensure their healthy life they must have a proper and concrete planning.			2
15.	- Fine display of image - Having better resolution and contrast - Low power consumption - Environmental friendly - It is free from the defects of angle viewing which occurs in conventional CRT/LCD TV			2
16.	It is used to reproduce the mid-frequencies in loudspeaker system. It can be of either direct radiation driver (like woofer) or compression driver (like tweeter). It can be mounted on the front baffle of loudspeaker or can be mounted on the throat of horn			2

	depending upon the type of driver i.e. direct radiation driver, compression driver. It is designed to work in a moderate frequency ranges of audio signal (500Hz-5kHz). Its frequency range is in between the range of woofer and squawker. Its frequency response is flat for the intermediate frequencies of audio signals.					
	Answer any 2 out of the given 3 questions in 30 – 50 words each.			(2x3=6)		
17.	Any three only				3= (1+1+1)	
	S.No.	Subsection				Possible associated problems
	1	Antenna subsection				Weak picture signal and weak sound signal causing poor resolution and poor audio quality. No sound but picture is received. No picture but sound is received.
	2	Tuner subsection				No sound. No picture. Normal picture but no sound. Distorted picture but normal sound. Noisy sound but normal picture
	3	Power supply subsection				Receiver is dead. No sound no raster. No sound. No raster.
	4	Horizontal subsection				No raster. Insufficient width of raster. Picture fold over. Picture rolling. Nonlinearity in horizontal direction.
	5	Vertical subsection				No Picture. No vertical deflection. Picture rolling. Bright horizontal line. Vertical height is distorted.
	6	Video subsection				No picture. Negative picture. Distorted picture.
18.	Moving coil loudspeaker is also known as dynamic loudspeaker. It is very commonly used loudspeaker. It consists of permanent magnet, voice coil and diaphragm and with supporting arrangements. When an electrical audio signal passes through the			3		

	voice coil, it causes the vibration of coil due to the magnetic fields. The voice coil is attached with the diaphragm with some arrangement. Diaphragm produces the audible sound wave in accordance with the input electrical audio signal.			
19.	Get the previous symptom if any from the user ↓ Inspect visually for physical damage ↓ Look recorder/player for burning smell ↓ Look the manual for test point provided by manufacturer ↓ As per instruction of manual find out the sub-section in which fault occur ↓ Check proper dc voltage/current in that sub-section ↓ If found improper voltage/current replace faulty parts/section ↓ Test for performance for satisfactory result ↓ If fault persist repeat the process			3
	Answer any 3 out of the given 5 questions in 50 – 80 words each.			(3x4=12)
20.	Important safety tips to help avoid injuries, which may include : • Identify the electric shock and arc flash hazards. • Use appropriate tools for the job. • Isolate equipment from power sources. • Check every circuit and every conductor for power before you touch it. • Begin working on electrical equipment only when de-energized. • Ensure ground before working on equipment. • Treat de-energized electrical equipments energized until lockout/tag out, test and ground procedures are met. • Use protective equipment and use insulated tools in areas where there are possible electrical shock.			$\frac{1}{2} \times 8 = 4$
21.	Piezoelectric microphone is also known as crystal microphone. It works on the principle of piezoelectric effect. Some of the materials show piezoelectricity. Under some mechanical pressure it exhibit voltage. The vibration or oscillation of pressure produces corresponding electrical signal. It consists of fine crystal that is placed in between electrodes. When a sound pressure strikes on the electrode, the crystal starts vibrating according to the sound pressure. Consequently, an electrical audio signal is generated. In this way, we get the audio output signal in the form of electrical signal.			2+1+1=4

	Merits • It is among light category of microphones. • It has high impedance • It provides uniform frequency response • External source is not required for its operation Demerits • It requires high gain power audio power amplifier. • It cannot be used at high temperature. Application It is usually used in public meeting, tape recorders etc.			
22.	The transmission of any information needs source of information, transmitter and transmitting channel. The source of information can be any sound, picture, graphics or combination of all. For the transmission of information at distant location, transmitting device is required. Transmitter requires transmitting channel through which the information travels. TV transmitter is used to transmit the video and audio signals. It consists of video section and audio section. The video section comprises of Mixer, AM modulator, Sweep circuit, Sync generator, High Power Linear Amplifier (HPLA). The audio section comprises of audio amplifier, FM modulator and power amplifier. <pre> graph LR Sweep[Sweep circuit] --> Sync[Sync generator] Composite[Composite video signal] --> Mixer[mixer] Sync --> Mixer Mixer --> AM[Low level AM modulator] Carrier1[Carrier osc] --> AM AM --> HPLA[HPLA] Audio[Audio input] --> Amp[Audio amp] Amp --> Fm[Fm Modulator] Carrier2[Carrier osc] --> Fm Fm --> Power[Power amp] HPLA --> Duplexer[duplexer] Power --> Duplexer Duplexer --> Antenna[Antenna] </pre>			2+2=4
23.	In Tape recorder System tape is coated with particles of magnetic material which passes through magnetic field that varies in accordance with audio frequency signal. Magnetic recording involves a magnetic tape/disk and a recording head. The principle relies on a current-carrying coil placed close to the magnetic medium, such as a magnetic tape/disk. In this technique, the required current to magnetize the recording medium can be quite large and coil of many windings is used. Magnetic recordings serve the purpose of recordings and reproducing the audio signals. Audio signals are analog time varying signals. Magnetic system recording must provide a system to represent the time varying air pressure and constantly varying time. The varying air pressure is converted into electrical signals and then to magnetic field strength in process that is the inverse of the			4

	recording process. The constantly varying time is converted to length by passing the tape at constant speed along the heads. The recording head. The field strength causes a proportional flux change in the tape. The playback <pre> graph LR Input[input] -- "To recording head" --> AE[Amplifier and equalizer] AE --> Bias[bias] AE --> PA[Power amplifier] Bias --> Erase[erase] Erase -- "To erase head" --> EH[To erase head] PA -- "To speaker" --> S[To speaker] </pre>			
24.	Telephone : The Graham Bell invented the telephone system in March 1876. He realised the communication between two people at distant places can be established by electrical means of transmission the telephones are categorised as follows. Simple phone : It is a simplest type of telephone set that primarily consist of hand set, hook switch and a ringer. It is now obsolete. Dialling type telephone : It consists of handset, mechanical dialling system, hook switch and ringer. Electronic/Digital phone : It is widely used telephone set in India. It consists of push button key pad. These buttons are in connection with the electronic circuit. As and when the buttons are pressed, the circuit transmit pulse or tone to the electronic exchange through the telephone line. Cordless phone: It is a combination of two units-portable unit and base unit. The base unit is connected with the telephone line. Portable unit is a combination of transmitter and receiver with small antenna. Mobile Phones : Mobile Phone does not require any physical connection between transmitter and receiver. Because of its easy and flexible size and service it covers a very large number of populations throughout the world.			4
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