

CBSE|DEPARTMENT OF SKILL EDUCATION

ELECTRONICS TECHNOLOGY (SUBJECT CODE - 820)

Blue-print for Sample Question Paper for Class XI (Session 2024-2025)

Max. Time: 3 Hours

Max. Marks: 60

PART A - EMPLOYABILITY SKILLS (10 MARKS):

UNIT NO.	NAME OF THE UNIT	OBJECTIVE TYPE QUESTIONS	SHORT ANSWER TYPE QUESTIONS	TOTAL QUESTIONS
		1 MARK EACH	2 MARKS EACH	
1	Communication Skills-III	1	1	2
2	Self-Management Skills- III	2	1	3
3	ICT Skills – III	1	1	2
4	Entrepreneurial Skills – III	1	1	2
5	GREEN SKILLS- III	1	1	2
TOTAL QUESTIONS		6	5	11
NO. OF QUESTIONS TO BE ANSWERED		Any 4	Any 3	07
TOTAL MARKS		1 x 4 = 4	2 x 3 = 6	10 MARKS

PART B - SUBJECT-SPECIFIC SKILLS (50 MARKS):

UNIT NO.	NAME OF THE UNIT	OBJECTIVE TYPE QUESTIONS	SHORT ANS. TYPE QUES.- I	SHORT ANS. TYPE QUES.- II	DESCRIPTIVE/ LONG ANS. TYPE QUESTIONS	TOTAL QUESTIONS
		1 MARK EACH	2 MARKS EACH	3 MARKS EACH	4 MARKS EACH	
1	Overview of Atom, Sub-Atomic Particles and CRO	07	01	-	01	09
2	Voltage and Current	07	01	01	01	10
3	Basics of Semiconductor	06	01	01	01	09
4	Bipolar Junction Transistor	06	01	01	01	09
5	Transistor Amplifier and Applications	06	01	-	01	08
TOTAL QUESTIONS		32	05	03	05	45
NO. OF QUESTIONS TO BE ANSWERED		Any 26	Any 3	Any 2	Any 3	34
TOTAL MARKS		1 x 26= 26	2 x 3= 6	3 x 2 = 6	4 x 3 = 12	50 MARKS

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Sample Question Paper for Class XI (Session 2024-2025)

Max. Time: 3 Hours

Max. Marks: 60

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **24 questions** in two sections – Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (6+18=) 24 questions, a candidate has to answer (6+11=) 17 questions in the allotted (maximum) time of 3 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A – OBJECTIVE TYPE QUESTIONS (30 MARKS):**
 - i. This section has 38 questions. A candidate has to do 30 questions.
 - ii. There is no negative marking.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (30 MARKS):**
 - i. This section contains 18 questions.
 - ii. A candidate has to do 11 questions.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

Q.1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)	
i.	What is the communication strategy where one tailors the message according to the audience's knowledge level, culture, and interests? (a) Feedback (b) Empathy (c) Audience analysis (d) Encoding	1
ii.	What is the name of the concept that involves understanding and adjusting one's emotional state to maintain self-control in challenging situations? (a) Self-awareness (b) Self-regulation (c) Motivation (d) Social skills	1
iii.	In a computer network, what is the role of a gateway? (a) It connects different network protocols. (b) It acts as a firewall. (c) It transfers emails between users. (d) It stores data temporarily.	1
iv.	In entrepreneurial finance, which of the following represents equity financing? (a) Borrowing from a bank (b) Issuing stocks to raise funds (c) Taking a personal loan (d) Securing a government grant	1
v.	The term carbon footprint refers to: (a) The total amount of carbon dioxide emissions directly and indirectly caused by an individual, organization, or product (b) The number of carbon atoms in a molecule (c) The pollution caused by heavy industries (d) The water consumed by a community	1
vi.	Which of the following techniques is most useful for improving emotional intelligence? (a) Emotional suppression (b) Self-reflection and mindfulness (c) Avoiding stressful situations (d) Time management	1
Q.2	Answer any 5 out of the given 7 questions (1 x 5 = 5 marks)	
i.	A circuit has a resistance of 10 ohms and a current of 2 amperes flowing through it. What is the voltage across the circuit? (a) 5 volts (b) 10 volts (c) 15 volts (d) 20 volts	1

ii.	What type of material is silicon in terms of electrical conductivity? (a) Insulator (b) Conductor (c) Semiconductor (d) Superconductor	1
iii.	What is the majority charge carrier in an N-type semiconductor? (a) Holes (b) Electrons (c) Protons (d) Neutrons	1
iv.	What is the process by which doping is done to a semiconductor to alter its conductivity? (a) Inversion (b) Fermentation (c) Diffusion (d) Fusion	1
v.	Which terminals of a Bipolar Junction Transistor (BJT) are responsible for controlling the current flow between the other two terminals? (a) Base and emitter (b) Base and collector (c) Emitter and collector (d) Collector and base	1
vi.	What is the function of the base region in a BJT? (a) To provide mechanical support (b) To control the current flow (c) To dissipate heat (d) To enhance voltage	1
vii.	What is the charge of an electron? (a) Positive (b) Negative (c) Neutral (d) Variable	1
Q.3	Answer any 6 out of the given 7 questions (1 x 6 = 6 marks)	
i.	In a common emitter transistor amplifier configuration, the input signal is applied to which terminal? (a) Collector (b) Base (c) Emitter (d) None of the above	1
ii.	What is the purpose of coupling capacitors in transistor amplifier circuits? (a) To provide DC isolation between stages (b) To increase the gain (c) To stabilize the bias point (d) To reduce distortion	1
iii.	What is the atomic number of an element determined by? (a) Protons (b) Neutrons (c) Electrons (d) Isotopes	1

iv.	Which subatomic particle has a negative charge? (a) Proton (b) Neutron (c) Electron (d) Positron	1
v.	In a Cathode Ray Oscilloscope (CRO), the horizontal axis represents: (a) Voltage (b) Current (c) Time (d) Frequency	1
vi.	What is the function of the deflection plates in a CRO? (a) To control brightness (b) To produce electrons (c) To deflect the electron beam (d) To amplify the signal	1
vii.	Which subatomic particle determines the atomic number of an element? (a) Proton (b) Electron (c) Neutron (d) Isotope	1
Q.4	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	Which unit is used to measure electrical resistance? (a) Volt (b) Ampere (c) Ohm (d) Watt	1
ii.	According to Ohm's Law, if the voltage across a resistor is doubled, what happens to the current? (a) It doubles (b) It remains the same (c) It halves (d) It quadruples	1
iii.	A circuit has a current of 2 amperes flowing through it with a resistance of 5 ohms. What is the voltage across the circuit? (a) 2.5 volts (b) 5 volts (c) 10 volts (d) 15 volts	1
iv.	What is the most commonly used semiconductor material in electronics? (a) Copper (b) Aluminum (c) Silicon (d) Gold	1
v.	What is the majority charge carrier in a P-type semiconductor? (a) Electrons (b) Holes (c) Protons (d) Neutrons	1

vi.	What is the process of adding impurities to a semiconductor called? (a) Fabrication (b) Purification (c) Doping (d) Deposition	1
Q.5	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	Which terminals of a Bipolar Junction Transistor (BJT) control the flow of current between the other two terminals? (a) Base and emitter (b) Collector and base (c) Emitter and collector (d) None of the above	1
ii.	What is the primary function of the base region in a BJT? (a) To emit electrons (b) To amplify the signal (c) To dissipate heat (d) To control the flow of carriers	1
iii.	In a common emitter transistor amplifier configuration, where is the input signal applied? (a) Collector (b) Base (c) Emitter (d) None of the above	1
iv.	What is the primary purpose of coupling capacitors in transistor amplifier circuits? (a) To block DC components (b) To increase gain (c) To stabilize the bias point (d) To reduce noise	1
v.	What is the gain of an amplifier? (a) The ratio of input to output voltage (b) The total power dissipation (c) The amount of current flow (d) The number of stages in the amplifier	1
vi.	What is the primary material used in semiconductor devices? a) Copper b) Silicon c) Iron d) Aluminum	1
Q.6	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	In an intrinsic semiconductor, the number of electrons is equal to the number of: a) Protons b) Neutrons c) Holes d) Photons	1

ii.	Which of the following elements is commonly used as a p-type of dopant in silicon? a) Phosphorus b) Arsenic c) Antimony d) Boron	1
iii.	Which process is used to increase the conductivity of a semiconductor? a) Filtration b) Doping c) Oxidation d) Reduction	1
iv.	What type of charge carriers are the majority in an NPN transistor's emitter? a) Holes b) Electrons c) Neutrons d) Ions	1
v.	What is the function of a transistor in an amplifier circuit? a) Rectification b) Signal amplification c) Signal attenuation d) Signal generation	1
vi.	In a common-emitter amplifier, the input signal is applied to: a) Base-emitter junction b) Collector emitter junction c) Basecollector junction d) Collector-substrate junction	1

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 marks)		
Answer each question in 20–30 words.		
Q.7	Differentiate between formal and informal communication channels, providing one example of each.	2
Q.8	Define self-regulation in the context of self-management. Why is it crucial for personal and professional success?	2
Q.9	What is encryption in ICT, and why is it important in securing data communication?	2
Q.10	How does market research influence entrepreneurial decision-making, and why is it critical in the initial stages of a business?	2
Q.11	What are the benefits of adopting sustainable farming practices ? Mention two methods that promote sustainability in agriculture.	2
Answer any 3 out of the given 5 questions in 20–30 words each (2 x 3 = 6 marks)		
Q.12	What is the role of temperature in the conductivity of a semiconductor?	2
Q.13	Discuss the difference between AC (Alternating Current) and DC (Direct Current). Provide examples of each type of current.	2
Q.14	Describe the process of doping in semiconductors. How does doping alter the conductivity and behavior of semiconductor materials?	2
Q.15	Describe the majority and minority charge carriers in n-type and p-type semiconductors.	2
Q.16	Describe the operation of an NPN transistor.	2
Answer any 2 out of the given 3 questions in 30–50 words each (3x2 = 6 marks)		
Q.17	Define a semiconductor and explain its conductivity characteristics compared to conductors and insulators. Provide examples of commonly used semiconductor materials.	3
Q.18	Compare the operation of a semiconductor diode with that of a Bipolar Junction Transistor (BJT). How do these devices differ in terms of their applications and characteristics?	3
Q.19	Describe the basic components of a Cathode Ray Oscilloscope (CRO). How does a CRO function to display waveforms?	3
Answer any 3 out of the given 5 questions in 50–80 words each (4x3 = 12 marks)		
Q.20	Describe the role of feedback in amplifier circuits. How does feedback affect the stability, gain, and frequency response of transistor amplifiers?	4
Q.21	Explain the concept of biasing in transistor amplifier circuits. What are the different methods of biasing and their significance in amplifier design?	4
Q.22	Compare and contrast NPN and PNP transistors. How do these two types differ in terms of their construction, operation, and applications?	4
Q.23	Explain the construction and working principle of a Bipolar Junction Transistor (BJT). Discuss the modes of operation (active, cutoff, and saturation) with relevant diagrams.	4
Q.24	Discuss the working principle of a common-emitter transistor amplifier. Include a detailed explanation of voltage gain, current gain, and input/output characteristics.	4