

**Answer Key: Chemistry**  
**Class HSSC - I**  
**SECTION – A**

**Q-1:**

**[1×17=17]**

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. C  | 2. C  | 3. B  | 4. A  | 5. C  | 6. A  |
| 7. D  | 8. C  | 9. C  | 10. D | 11. A | 12. A |
| 13. C | 14. B | 15. A | 16. D | 17. D |       |

**RUBRIC: HSSC-I Centralized Term Examination 2022-2023**

**Subject: Chemistry HSSC-I**

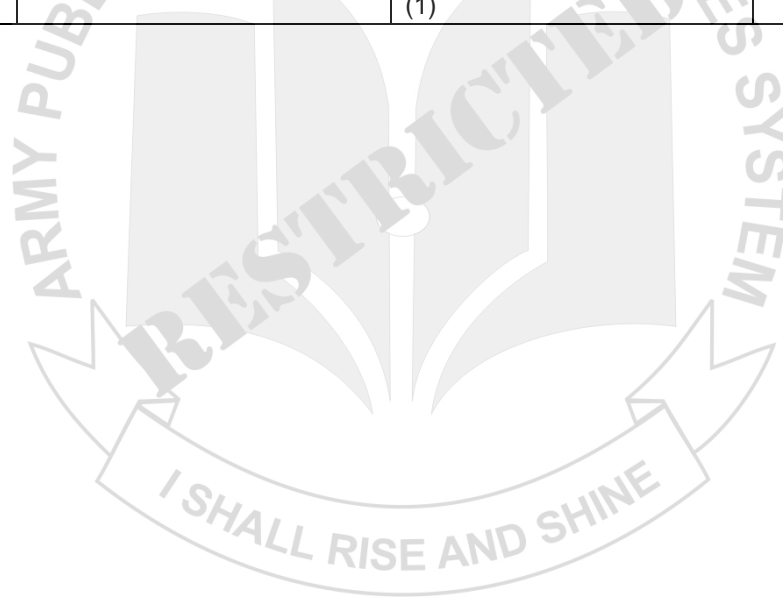
Q.#/ Part #	Criteria	Excellent Response	Average Response		Below Average Response
2 (i)	Limiting reactants	Correct explanation with reasoning(3)	Partially correct answer (2)	–	Irrelevant/ wrong answer (0)
2 (ii)	Mole and Avogadro's number	Correct answer with reason(3)	Partially correct answer (2)	Weak explanation (1)	Irrelevant/ wrong answer (0)
2 (iii)	Electronic configuration	Correct electronic configuration of Ca, Mn, Zn(1x3=3)	Correct electronic configuration of any two elements (2)	-	Wrong answer(0)
2 (iv)	Calculation of energy according to Plank's quantum theory ( $E=hc/\lambda$ or $E=h\nu$ )	Correct formula and calculation(3)	Correct formula wrong calculation(1.5)		Irrelevant/ wrong answer (0)
2 (v)	Sp <sup>2</sup> hybridization of BF <sub>3</sub> .	Correct explanation about structure of BF <sub>3</sub> (3)	Partially correct (2)		Irrelevant/ wrong answer (0)
2 (vi)	Application of molecular orbital theory for helium molecules	Correct answer with reactions (3)	Partially correct answer(2)		Irrelevant/ wrong answer (0)
2 (vii)	Properties of plasma	Three correct properties (3)	Any two correct properties(2)	Any one correct property (1)	Irrelevant/ wrong answer (0)
2 (viii)	Determination of molecular mass and density of gas with the help of ideal gas equation	Correct answer for Molecular mass with derivation(1.5)	Partially correct derivation(0.5)		Irrelevant/ wrong answer (0)
		Correct answer for Density of gas with derivation(1.5)	Partially correct derivation(0.5)		
2 (ix)	Differences between molecular crystals and metallic solids	Any three correct differences (3)	Any two correct differences (2)		Irrelevant / wrong answer (0)
2 (x)	Uses of liquid crystals	Correct answer for uses of liquid crystals (any six) (0.5x6=3)	Any three correct uses (0.5x3=1.5)	-	Irrelevant/ wrong answer (0)
2 (xi)	Factors effecting viscosity	Correct answer for effect of intermolecular forces(1.5)	Partially correct answer(1)	-	Irrelevant/ wrong answer (0)
		Correct answer for effect of temperature(1.5)	Partially correct answer(1)		



2 (xii)	Allotropes of Sulphur	Correctly discussed any three allotropes (3)	Correctly explained any two allotropic forms (2)	Correctly explained any one (1)	Irrelevant/ wrong answer (0)
2 (xiii)	$K_c$ and $K_p$ expressions of reactions	Correct expressions for each reaction ( $1 \times 3 = 3$ )	Correct expressions for any two reactions (2)		Irrelevant/ wrong answer (0)
2 (xiv)	Solution to find $K_{sp}$	Correct input if values (1) Correct formula (1) correct answer after calculation ( $1.6384 \times 10^{-5}$ ) (1)	Correct values and formula but wrong calculation (2)		irrelevant/ wrong answer (0)
2 (xv)	Lowery Bronsted concepts for acid and base with the help of an example	Correct definition with the help of an equation showing reaction between acid and base (3)	Partially correct definition without example (1)	Weak answer (1.5)	Irrelevant/ wrong answer (0)
2 (xvi)	Three types of salts on the basis of their reactivity with water	Reactivity of Salts of weak acids and strong bases, with example (1)	Partially correct answer (1.5)		Irrelevant/ wrong answer (0)
		strong acids and weak bases, with example (1)			
		weak acids and weak bases, with example (1)			
2 (xvii)	Types of equilibrium	Correct answer for homogenous equations with example (1.5)	Partially correct explanation (1.5)		Irrelevant/ wrong answer (0)
		Correct answer for heterogenous equations with example (1.5)			
2 (xviii)	Solubility product	Correct definition (1) explanation with the help of example (2)	Partially correct explanation (1.5)	-	Irrelevant/ wrong answer (0)
2 (xix)	powdered Zinc reacts more rapidly with dil HCl than a large piece of Zinc	Correct answer with reason (3)	Weakly explained (1.5)		Irrelevant/ wrong answer (0)
2 (xx)	Haloform reactions (iodoform test) of primary sec. and tertiary alcohol	Correct answers for three types of alcohol with reactions (3)	Partially correct answer with reactions (2)		Irrelevant/ wrong answer (0)
3 (a)	ionization constant of water and calculate pH and pOH in aqueous medium using given $K_w$ values	Correct explanation (8)	Weakly explained (4)	-	Irrelevant/ wrong answer (0)
3 (b)	VESPR theory and its postulates	Correct statement of theory and postulates ( $1 + 4 = 5$ )	Correct statement of theory with any three postulates (4)	Weak explanation (3)	Irrelevant/ wrong answer (0)



4(a)	Le chatelier's principle and factors affecting equilibrium	Le chatelier's principle(2)	Partially correct statement(1.5)		Irrelevant/ wrong answer (0)
		Effect of change in pressure(3)	Partially correct explanation(1.5)		
		Effect of change in temperature(3)	Partially correct explanation(1.5)		
4 (b)	Ideal gas derivation using Boyle's, Charles' and Avagadro's law	Correct derivation with all steps (5)	Partially correct derivation (3)	Incomplete derivation (2.5)	Irrelevant/ wrong answer (0)
5 (a)	Derivation of radius of an orbit of an atom	Correct derivation with all complete steps (6)	Partially correct derivation with incomplete steps(4)	-	Irrelevant/ wrong answer (0)
5 (b)	Structure of NaCl crystal	Correct description of structure (3)	Partially correct answer (1.5)	Weak explanation(3)	Irrelevant/ wrong answer (0)
	calculation of $\text{Cl}^{-1}$ ion	Correct calculation (2)	Partially Correct calculation (1)		
	Calculation of $\text{Na}^{+1}$ ion	Correct calculation (2)	Partially Correct calculation (1)		



**Answer Key: Computer Science**

**Class: XI**

**Section – A**

**[Marks: 15]**

**Q.1. Fill the relevant bubble for each part. Each part carries one mark.**

**[1×15=15]**

- |        |        |        |        |        |
|--------|--------|--------|--------|--------|
| (1) C  | (2) A  | (3) C  | (4) A  | (5) D  |
| (6) C  | (7) C  | (8) A  | (9) B  | (10) B |
| (11) C | (12) B | (13) B | (14) A | (15) D |

**Section – B & C**

**[Marks: 60]**

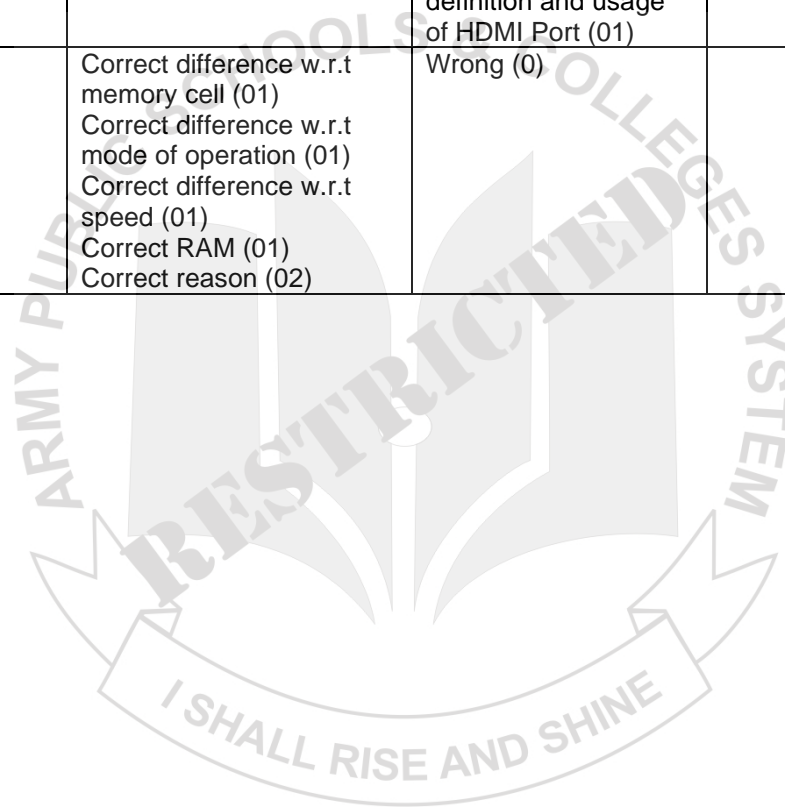
Q.# /Part #	Criteria	Level 1 (Marks)	Level 2 (Marks)	Level 3 (Marks)	Level 4 (Marks)
2 (i)	Features of a monitor	Correct description of Pixel (01) Correct description of Resolution (01) Correct description of Dot Pitch (01)	Any two correct descriptions (02)	Any one correct description (01)	Wrong (0)
(ii)	Scanner types	Any three correct applications (03)	Any two correct applications (02)	Any one correct application (01)	Wrong (0)
(iii)	Firmware	Correct definition (01) Any two logical explanation of using firmware (02)	Wrong (0)		
(iv)	Memory Word & relation with memory access	Correct definition (01) Correct explanation w.r.t memory addressing (02)	Wrong (0)		
(v)	Cache memory & its diagram	Correct definition (01) Correct diagram depicting cache types and their linkage (02)	Wrong (0)		
(vi)	Advantages of using Flash/Chip memory	Any three correct advantages (03)	Any two correct advantages (02)	Any one correct advantage (01)	Wrong (0)
(vii)	Function of types of buses	Correct functionality of Address Bus (01) Correct functionality of Data Bus (01) Correct functionality of Control Bus (01)	Wrong (0)		



(viii)	Instructions for transferring data	Any three correct instructions and description (03)	Any two correct instructions and description (02)	Any one correct instruction and description (01)	Wrong (0)
(ix)	Program Control	Correct definition (01) Any two correct instructions (02)	Wrong (0)		
(x)	AGP	Correct definition (01) Correct functionality (02)	Wrong (0)		
(xi)	Dial-up and ISDN modems	Correct usage of both modems (02) Transmission Speed for both (01)	Wrong (0)		
(xii)	SATA vs EIDE	Correct difference between the two interfaces (02) Data rate of SATA 3 (01)	Wrong (0)		
(xiii)	Asynchronous and Synchronous transmission	Correct definitions (02) Correct faster mode with reason (01)	Wrong (0)		
(xiv)	Satellite Communication	Correct description of working (02) Correct drawback (01)	Wrong (0)		
(xv)	LAN	Describing any three characteristics correctly (03)	Describing any two characteristics correctly (02)	Describing any one characteristic correctly (01)	Wrong (0)
(xvi)	Functions performed by Session layer	Describing any three functions correctly (03)	Describing any two functions correctly (02)	Describing any one function correctly (01)	Wrong (0)
3 (a)	IP address classes	Correct reason for making classes (01) Correct names of classes in TCP/IP (01) Correct Octal range and address of Class A (02) Correct Octal range and address of Class B (02)	Wrong (0)		
3 (b)	Working of ALU	Correct description of all six steps (06)	Wrong (0)		
4 (a)	Instruction cycle	Fetch operation (02) Decode operation (02) Execute operation (02)	Wrong (0)		
4 (b)	OSI model	Correct purpose of three layers (06)	Correct purpose of two layers (04)	Correct purpose of one layer (02)	Wrong (0)



5 (a)	Ports	Correct definition and usage of USB Port (02) Correct definition and usage of Fire wire Port (02) Correct definition and usage of HDMI Port (02)	Partially correct definition and usage of USB Port (01) Partially correct definition and usage of Fire wire Port (01) Partially correct definition and usage of HDMI Port (01)	Wrong (0)	
5 (b)	D-RAM and S-RAM	Correct difference w.r.t memory cell (01) Correct difference w.r.t mode of operation (01) Correct difference w.r.t speed (01) Correct RAM (01) Correct reason (02)	Wrong (0)		



**Answer Key: Physics - Class XII**  
**SECTION – A (Marks 17)**

**Q.1.**

**[1×17=17]**

(1)	B	(2)	C	(3)	D	(4)	A	(5)	D
(6)	B	(7)	A	(8)	C	(9)	D	(10)	B
(11)	B	(12)	A	(13)	B	(14)	D	(15)	B
(16)	A	(17)	C						

**SECTION – B (Marks 42)**

**Q.2.**

**[14×3=42]**

- i) Refer to pgs19 of the Textbook.
- ii) Refer to pg 26 of the Textbook.
- iii) Refer to pg 42 of the Textbook.
- iv) Refer to pgs 68, 69 of the Textbook.
- v) Refer to pg 83 of the Textbook.
- vi) Refer to pg 91 of the Textbook.
- vii) Refer to pg 84 of the Textbook.

$$P = \frac{V^2}{R_{eq}}$$

$$30 = \frac{(10)^2}{\left(\frac{5R}{R+5}\right)}$$

$$R = 10W$$

- viii) Refer to pg 87 of the Textbook.
- ix) Refer to pg 135 of the Textbook.
- x) Refer to pg 125 of the textbook.
- xi) Refer to pg 159 of the textbook.

$$B = \frac{N}{L} \mu_0 I$$

$$I = 0.597A$$

- xii) Refer to pgs 157,158 of the textbook.
- xiii) Refer to pg 262 of the textbook.
- xiv) Refer to pgs 171 of the textbook.
- xv) Refer to pg 212 of the textbook.

$$Z = \sqrt{R^2 + (X_L - X_C)^2}$$

$$X_L = \omega L = 2 \times 3.14 \times 50 \times 0.3 = 94.2W$$

$$X_C = \frac{1}{\omega C} = \frac{1}{2 \times 3.14 \times 50 \times 15 \times 10^{-6}} = 212W$$

$$Z = \sqrt{50^2 + (94.2 - 212)^2} = 127.97W$$

- xvi) Refer to pg 151 of the textbook.
- xvii) Refer to pg 149 of the Textbook.
- xviii) Refer to pgs 197,201 of the Textbook.
- xix) Refer topg 209 of the Textbook .
- xx) Refer to pg 258 of the Textbook.

**SECTION – C (Marks 26)**

**Note:**

**Attempt any two questions.**

**[2×13=26]**

**Q.3.**

- a) Refer to pgs 30,31 of the Textbook
- b) Refer to pgs 186,188 of the Textbook

**[5]**

**[5]**

$$V = V_0 \sin(\omega t - \phi)$$

Comparing given equation with above one gives

$$V_0 = 220V \text{ and } \omega = 2.25 \times 10^5 \text{ rad/s}$$

$$X_C = \frac{1}{\omega C} = 88.88W$$

$$I_0 = \frac{V_0}{X_C} = 2.47A$$

$$V_{rms} = \frac{V_m}{\sqrt{2}} = 155.6V \quad ; \quad I_0 = \frac{I_m}{\sqrt{2}} = 1.75A$$





$$I = 2.47 \sin(2.25 \times 10^5 t - 25^\circ + 90^\circ)$$

$$I = 2.47 \sin(2.25 \times 10^5 t + 65^\circ)$$

- Q.4.**
- c) Refer to pg 253 of the Textbook [3]
  - a) Refer to pgs 164,165 of the Textbook [1+4]
  - b) Refer to pg 127 of the textbook [4]

$$t = NIAB \sin \theta$$

$$A = 0.12 \times 0.1 = 0.012 \text{ m}^2$$

$$\tau = 50 \times 2 \times 0.012 \times 0.2 \times \sin 60^\circ = 0.2 \text{ Nm}$$

- Q.5.**
- c) Refer to pgs 194,197 of the Textbook [4]
  - a) Refer to pgs 21,26 of the Textbook [1+3]
  - b) Refer to pg 93 of the Textbook [5]

Consider the loop ABEFA and apply Kirchoff's voltage law as:

$$\varepsilon - I_1 R_1 - (I_1 - I_2) R_2 = 0$$

$$3 - 10 I_1 - 15 I_1 + 15 I_2 = 0$$

$$3 - 25 I_1 + 15 I_2 = 0$$

Now consider the loop BCDEB and apply Kirchoff's voltage law as:

$$- I_2 R_3 - I_2 R_4 - (I_2 - I_1) R_2 = 0$$

$$-20 I_2 - 50 I_2 - 15 I_2 + 15 I_1 = 0$$

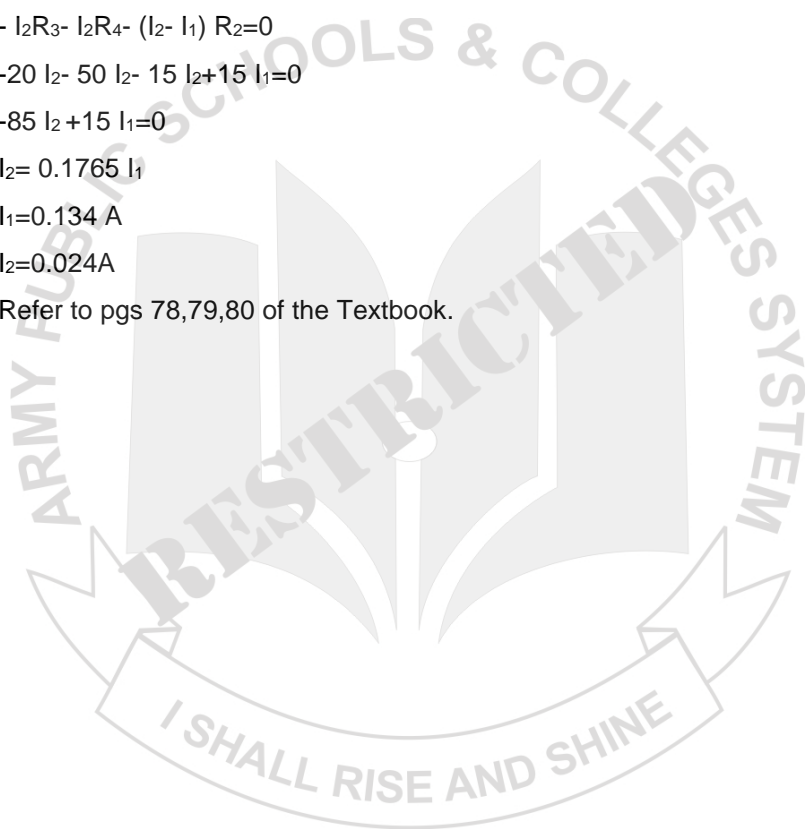
$$-85 I_2 + 15 I_1 = 0$$

$$I_2 = 0.1765 I_1$$

$$I_1 = 0.134 \text{ A}$$

$$I_2 = 0.024 \text{ A}$$

- c) Refer to pgs 78,79,80 of the Textbook. [4]





**RUBRICS: FIRST TERM EXAMINATION 2022**  
**SUBJECT: PHYSICS HSSC-II**

Q.# /Part #	Criteria	Level 1 (Marks)	Level 2(Marks)	Level 3 (Marks)	Level 4 (Marks)
2(i)	Derivation + Diagram $\Phi_E=0$	Derivation + Diagram (1+0.5) $\Phi_E=0$	Partially correct derivation (0.5) Correct diagram(0.5)	Some correct mathematical steps (0.5) Wrong diagram(0)	Wrong answer (0) Wrong diagram(0)
	Derivation +Diagram $\Phi_E=EA$	Derivation + Diagram (1+0.5) $\Phi_E=EA$	Partially correct derivation (0.5) Correct diagram(0.5)	Some correct mathematical steps (0.5) Wrong diagram(0)	Wrong answer (0) Wrong diagram(0)
2(ii)	Claim: Yes	Correct claim (1)	Correct claim(1)	Wrong claim(0)	Wrong claim(0)
	Scientific reasoning	Cities sufficient and relevant evidence to support the given claim / explanation./Clear and well-expressed answer, including specific details/ information (2)	Partially correct response. (1)	Any relevant information (0.5)	Wrong answer (0)
2(iii)	Scientific reasoning	Clear and well-expressed answer, including specific details/ information (3)	Partially correct response. (1.5)	Any relevant information (1)	Wrong answer (0)
2(iv)	Metal: Graph + Information	Correct graph + Relevant information(1)	Partially correct information (.5)	Any relevant information (0.5)	Wrong answer (0) Wrong graphs(0)
	Bulb: Graph + Information	Correct graph + Relevant information(1)	Partially correct information (.5)	Any relevant information (0.5)	
	Diode: Graph + Information	Correct graph + Relevant information(1)	Partially correct information (.5)	Any relevant information (0.5)	
2(v)	Scientific reasoning	Cities sufficient and relevant evidence to support the given claim / explanation./Clear and well-expressed answer, including specific details/ information (3)	Partially correct response (1.5)	Any relevant information (1)	Wrong answer (0)
2(vi)	Scientific reasoning	Cities sufficient and relevant evidence to support the given claim / explanation./Clear and well-expressed answer, including specific details/ information (3)	Partially correct response (1.5)	Any relevant information (1)	Wrong answer (0)
2(vii)	Formulae	Correct relevant formulae (1)	Partially correct (0.5)	Wrong formula (0)	Wrong derivation(0) Wrong answer (0)
	Calculation	Correct calculation with answer (2)	Partially correct calculations(1)	Some correct mathematical steps (0.5)	
2(viii)	Condition: $R=r$	Correct condition (1)	Incorrect condition (0)	Some relevant information (0.5)	Wrong condition(0) Wrong derivations(0)
	Derivation of mathematical relation	Correct mathematical derivations (2)	Partially correct mathematical derivations (1)		
	Scientific reasoning	Cities sufficient and relevant evidence	Partially correct response (1.5)	Any relevant information (1)	Wrong answer (0)



		to support the given claim / explanation./Clear and well-expressed answer, including specific details/ information (3)			
2(x)	Explanation	Clear and well-expressed answer, including specific details/ information (3)	Partially correct response (1.5)	Any relevant information (1)	Wrong answer (0)
2(xi)	Formulae	Correct relevant formulae (1)	Partially correct (0.5)	Wrong formula (0)	Wrong answer (0)
	Calculation	Correct calculation with answer (2)	Partially correct (1)	Some correct mathematical steps (0.5)	
2(xii)	Scientific reasoning	Cities sufficient and relevant evidence to support the given claim / explanation./Clear and well-expressed answer, including specific details/ information (3)	Partially correct response (1.5)	Any relevant information (1)	Wrong answer (0)
2(xiii)	cientific reasoning	Clear and well-expressed answer, including specific details/ information (3)	Partially correct response (1.5)	Any relevant information (1)	Wrong answer (0)
2(xiv)	Eddy Current: Production +Minimization	Production of eddy current (1.5) Minimization of eddy current(1.5)	Partially correct response (1.5)	Any relevant information (1)	Wrong answer (0)
2(xv)	Formulae	Correct relevant formulae (1)	Partially correct (0.5)	Wrong formula (0)	Wrong answer (0)
	Calculation	Correct calculation with answer (2)	Partially correct (1)	Some correct mathematical steps (0.5)	
2(xvi)	Principle: Electromagnetic induction	Correct Principle (1)	Incorrect Principle (0)	Wrong Principle(0)	Wrong answer (0)
	Explanation	Clear and well-expressed answer, including specific details/ information (2)	Partially correct response (1)	Any relevant information (0.5)	
2(xvii)	Proof	Correct proof (3)	Partially correct derivations(1.5)	Some relevant information (1)	Wrong answer (0)
2(xviii)	Dependence of inductive reactance with frequency	Inductive reactance dependence on frequency(1.5)	Partially correct response(1)	Some relevant information (0.5)	Wrong answer (0)
	Dependence of capacitive reactance with frequency	Capacitive reactance dependence on frequency (1.5)	Partially correct response (1)	Some relevant information (0.5)	
2(xix)	Claim: Current leads the voltage	Correct claim (1)	Correct claim(1)	Wrong claim(0)	Wrong claim(0)
	Explanation with phasor diagram	Cities sufficient and relevant evidence to support the given claim with diagram.(2)	Partially correct response. (1)	Any relevant information (0.5)	Wrong answer (0)
2(xx)	Paramagnetic materials in magnetic field.	Correct explanation (1.5)	Partially correct explanation (1)	Some relevant information (1)	Wrong answer (0)
	Diamagnetic materials in magnetic field.	Correct explanation (1.5)	Partially correct explanation (1)	Some relevant information (1)	
3(a)	Definition +Diagram	Correct definition+ Diagram (1)	Partially correct definition + diagram (0.5)	Wrong (definition + diagram) (0)	Wrong answer (0)



	Derivation + Explanation	Correct derivation and explanation (4)	Partially correct derivation and explanation (2)	Some mathematical steps (1)	
3(b)	Calculation + Answer	Correct calculation with answer(1)[For each part]	Partially correct numerical(2.5)	Some correct mathematical steps (2)	Wrong answer (0)
3 (c)	Difference between insulators and conductors with diagram	Insulators with diagram (1.5) Conductors with diagram (1.5)	Partially correct response (2.5)	Any relevant information (1)	Wrong answer(0)
4(a)	Definition	Correct definition (1)	Partially correct (0.5)	Wrong definition (0)	Wrong answer (0)
	Explanation with diagram+ graph	Correct explanation with correct labeled diagram+ graph (4)	Partially correct explanation (2)	Some relevant info (1)	
4 (b)	Formulae	Correct relevant formulae (1)	Partially correct (0.5)	Wrong formula (0)	Wrong answer (0)
	Calculation	Correct calculation with answer (3)	Partially correct (1.5)	Some correct mathematical steps (1)	
4 (c)	Power loss in a resistor. Power loss in an inductor.	Correct explanation + derivation (2) Correct explanation + derivation (2)	Partially correct response (1) Partially correct response (1)	Any relevant information (2)	Wrong answer(0)
5 (a)	Statement	Correct (1)	Partially correct (0.5)	Wrong statement (0)	Wrong answer(0)
	Explanation + Derivation	Correct explanation + derivation (3)	Partially correct response (1.5)	Any relevant information (2)	
5 (b)	Formulae	Correct relevant formulae (1)	Partially correct (0.5)	Wrong formula (0)	Wrong answer(0)
	Calculation	Correct calculation with answer (4)	Partially correct (2)	Some correct mathematical steps (1.5)	
5 (c)	Definition Practical applications	Definition(1) Practical applications(3)	Partially correct explanation (1.5)	Some relevant info (1)	Wrong answer(0)

