RUBRICS: HSSC 1st ANNUAL EXAMINATION 2024
SUBJECT: PHYSICS HSSC-II (Paper-D)

Q.# /Part #	Criteria	Level 1 (Marks)	Level 2(Marks)	Level 3 (Marks)	Level 4 (Marks)	Level 5 (Marks)	
2(i)	Explaining the reason that water has a large dielectric constant, but it is rarely used in capacitors.	Correctly explaining involving the concept that water has polar molecules and small dielectric field strength (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)		
OR 2(i)	Defining the moderator used in atomic reactors with an example.	Correctly explaining reason e.g. It is the material used to slow down the neutrons in the reactor, increases the probability of fission reaction with example heavy water (deuterium oxide) used in PWR (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)		
2(ii)	How will capacitance of a parallel plate capacitor be affected if area of plates is doubled and separation between them is halved?	Correctly explaining with mathematics that capacitance will increase by four times (03)	Only correct reason with two correct mathematical steps (02)	Some relevant information (01)	Wrong answer (0)		
OR 2(ii)	Defining the terms 'critical mass', 'sub-critical mass' and 'super critical mass' for fission chain reaction.	Correctly defining three terms (03)	Correctly defining two terms (02)	Some relevant step (01)	Wrong answer (0)		
2(iii)	Explaining the rotation of rotor with the help of stator in A.C. motor	Correctly explaining the reason with concept of interaction of rotating magnetic field of stator and magnetic field due eddy current in rotor according to Lenz's law (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)		
OR 2(iii)	Explaining the reason of increase in rate of doing work by motor when the back emf	Correctly explaining the reason e.g. as rate of doing work increases by motor e.g. it lifts or rotates more load, its	Partially correct explanation (02)	Some relevant information (01)	Wrong answer (0)		

	decreases.	angular velocity decreases as its MOI increases. these causes decrease in back emf (03)					
2(iv)	Explaining a rheostat be used as potential divider?	Correctly explaining rheostat working as potential divider (02)	Partially correct (01)	Wrong answer (0)			
	Drawing the circuit diagram	Correct labelled diagram (01)	Partially correct (0.5)	Wrong answer (0)			
OR 2(iv)	Defining alpha factor and beta factor	Correctly definitions of alpha factor and beta factor (01)	Correct definition of any one (0.5)	Wrong answer (0)			
	Deriving the relation between alpha and beta factors	Correct derivation (02)	Partially correct (01)	Wrong answer (0)			
2(v)	Calculating the current flowing through a circuit of resistance 1500 ohm connected with a battery of emf 100V with internal resistance 0.01 Ohm.	Correct calculation of current with correct answer in SI units i.e. 66.6 mA or 0.06A (03)	Partially correct (02)	Some relevant step (01)	Wrong answer (0)		
OR 2 (v)	Define 'Magnetic Flux' and write its units.	Correctly writing definition and its SI unit "weber (Wb)" (1.5)	Correctly writing only definition (01)	Correctly writing SI unit only or any relevant information (0.5)	Wrong answer (0)		
	Define 'Magnetic Flux density' and write its units.	Correctly writing definition and its SI unit "tesla (T)" (1.5)	Correctly writing only definition (01)	Correctly writing SI unit only or any relevant information (0.5)	Wrong answer (0)		
2(vi)	Explaining that an electron at rest cannot be set in motion with a magnet	Correct response i.e. No with correct explanation using formula $F=qvB$ (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)		
OR 2(vi)	Defining spontaneous emissions and drawing its diagram	Correctly defining with correctly labelled diagram (1.5)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)		
	Defining stimulated emissions and drawing its diagram	Correctly defining with correctly labelled diagram (1.5)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)		
2(vii)	Calculating the time	Correct calculation of time	Partially correct (02)	Some relevant	Wrong answer (0)		

	period of an electron projected into a uniform magnetic field of 20mT and moves in a circle of radius 6cm	period with correct answer in SI units i.e. T= 1.88 x 10⁻⁹s (03)		step (01)		
OR 2(vii)	Explaining the reason for use of common emitter configuration of transistor widely used in amplifier circuits	Correctly Explaining the reason involving that it has higher current gain (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)	
2(viii)	Explaining the choke coil	Correctly Explaining (02)	Partially correct (01)	Wrong answer (0)		
	Explaining the importance of its use in A.C. circuits.	Correctly Explaining (01)	Partially correct (0.5)	Wrong answer (0)		
OR 2(viii)	Reasoning of the production of eddy currents and Identification of their heating effects.	Correctly explaining the reason of the production of eddy current and its heating effects (03)	Partially correct explanation (02)	Some relevant information (01)	Wrong answer (0)	
2(ix)	Determining the gradient of a graph of inductive reactance against frequency with brief explanation	Correctly drawing the graph, finding slope with brief explanation (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)	
OR 2(ix)	Stating the Stefan-Boltzmann law for black body radiation along with mathematical expression as well.	Correctly stating the law with mathematical relation (03)	Partially correct i.e. only stating the law correctly (02)	Some relevant information (01)	Wrong answer (0)	
2(x)	Differentiate "Curie temperature" and "Critical temperature".	Correct definitions of curie temperature and critical temperature with one example of each. (03)	Partially correct i.e. correctly defining curie temperature and critical temperature (02)	Some relevant information (01)	Wrong answer (0)	
OR 2(x)	Explaining the conversion of galvanometer into ammeter with figure	Correctly explaining that shunt resistance is connected in parallel with the galvanometer with figure (01)	Some relevant information (0.5)	Wrong answer (0)		
	Deriving the formula	Correct derivation (02)	Partially correct (01)	Wrong answer (0)		

2(xi)	Explaining the reason in a transistor, the base is thin and lightly doped.	Correctly Explaining the reason I,e. reducing base resistance, power consumption etc.(03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)	
OR 2(xi)	A 24.0V car battery powers a 30.0 watt bulb. How many charges pass through it, in each second?	Correct calculation of charges with correct answer in SI units i.e. Q= 1.25C (03)	Partially correct (02)	Some relevant step (01)	Wrong answer (0)	
2(xii)	Explaining the factors cause to produce magnetic field in an atom.	Correctly explaining any three factors i.e electrons spin, orbital motion of electrons, nuclear spin etc (03)	Correctly explaining any two factors given in rubric level one (02)	Correctly explaining any one factor given in rubric level one (01)	Wrong answer (0)	
OR 2(xii)	Deriving 3rd postulate of Bohr's atomic model from de-Broglie wavelength	Correct proof (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)	
2(xiii)	Explaining the condition under which Compton shift has maximum wavelength	Correctly explaining the condition i.e. x-ray is scattered at 180° from rest electron (01)	Partially correct (0.5)	Wrong answer (0)		
	Calculating maximum Compton shift in wavelength	Correct calculation(02)	Partially correct (01)	Wrong answer (0)		
OR 2(xiii)	Explaining the depletion layer in PN-Junction	Correct explanation (1.5)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)	
	Explaining the formation of PN junction	Correct explanation (1.5)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)	
2(xiv)	Explaining the reason that when a solid is heated it begins to glow, it first appears red.	Correct explanation (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)	
OR 2(xiv)	Naming the basic forces of nature exist	Correctly writing names of four basic forces of nature i.e. gravitational force, electromagnetic force, strong force and weak force (01)	Correctly writing names of one basic forces of nature (0.5)	Wrong answer (0)		

	Describing any two basic forces of nature	Explaining briefly any two forces of nature (02)	Explaining briefly any one force of nature (01)	Some relevant information (0.5)	Wrong answer (0)	
Q. 3	Explanation of the concept of electric potential	Correctly defining electric potential (01)	Partially correct (0.5)	Wrong answer (0)		
	Deriving an expression for electric potential at a point in electric field due to a point charge.	Correct derivation including calculation of r^2, work done during the first step, total work done, potential difference between two points and finally calculating final result for electric potential (05)	Correctly calculating any three points mentioned in level-1 (04)	Correctly calculating any two points mentioned in level-1 (03)	Correctly calculating any one point mentioned in level-1 (02)	Some relevant information (01)	Wrong answer (0)
	Diagram for electric potential	Correct labeled diagram (01)	Partially correct (0.5)	Wrong answer (0)		
OR Q. 3	Statement of postulates of Bohr's atomic model.	Correctly stating three postulates (03)	Correctly stating two postulates (02)	Correctly stating one postulate (01)	Wrong answer (0)	
	Showing that radii of the orbit of H-atom are quantized.	Correctly calculating quantized radii involving equating centripetal force and electrostatic force, putting value of velocity , finding value of first radius, and finding and the value of r_n (04)	Correctly calculating any three points mentioned in level-1 (03)	Correctly calculating any two points mentioned in level-1 (02)	Some relevant information (01)	Wrong answer (0)
Q. 4	Defining emf(ε), internal resistance(r) and terminal potential difference (V_t) of a battery?	Correctly defining all three quantities (03)	Correctly defining two quantities (02)	Correctly defining one quantity (01)	Wrong answer (0)	
	Derivation of relation between emf, internal resistance and terminal p.d. of battery	Correctly deriving the relation V_t=E-Ir with circuit diagram (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)	
	Stating the condition when $V_t > \varepsilon$	Correctly stating the condition i.e. during charging of battery, $V_t > \varepsilon$ (01)	Wrong answer (0)			
OR Q. 4	Defining AC generator	Correct definition (01)	Partially correct definition (0.5)	Wrong answer (0)		

	Discussing that how AC generator is used to produce an alternating current.	Correctly writing working of AC generator (02)	Partially correct working (01)	Wrong answer (0)			
	Deriving mathematical expression of A.C.	Correctly deriving the formula (03)	Partially correct derivation with at least four correct mathematical steps (02)	Some relevant information (01)	Wrong answer (0)		
	Drawing graph of AC	Correct labeled diagram (01)	Partially correct (0.5)	Wrong answer (0)			
Q. 5	The Half life of Radium is $5.0 \times 10^{10} S$. A sample contains 6.0×10^{16} nuclei. Calculating Decay constant.	Correctly calculation with answer 1.4 x 10 $^{-11}$ m^{-1}(02)	Partially correct (01)	Wrong answer (0)			
	Calculating that how many radium nuclei will decay per second	Correctly calculation with answer 4.2 x 10^5 Bq or 0.42 M Bq (02)	Partially correct (01)	Wrong answer (0)			
	Expressing answer in curies.	Correctly calculation with answer 1.135 x 10 $^{-5}$ or 0.11µ Ci (02)	Partially correct (01)	Wrong answer (0)			
OR Q. 5	A sinusoidal alternating voltage of angular frequency ω is connected across a capacitor C. Finding mathematical expression for instantaneous voltage.	Correct derivation (02)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)		
	Finding mathematical expression for current.	Correct derivation (02)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)		
	Finding mathematical expression for average power dissipated per cycle of applied voltage.	Correct derivation (02)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)		
Q. 6	Explaining the	Correctly describing the pair	Correctly describing any	Correctly	Some relevant	Wrong	

	phenomena of pair production.	production involving definition, correct labeled figure, role of nucleus and minimum energy 1.02 MeV (04)	three points mentioned in level-1 (03)	describing any two points mentioned in level-1 (02)	information (01)	answer (0)	
	Explaining the phenomena of pair annihilation.	Correctly describing pair annihilation involving definition, correct labeled figure and following conservation laws (02)	Partially correct (01)	Wrong answer (0)			
OR Q. 6	Describing the magnetic properties of material explained on the basis of B-H curve.	Correctly explaining material on basis of B-H curve involving any four points i.e. saturation , hysteresis, Retentively or Remanance, coercively, area of the loop with short explanation (05)	Correctly explaining material on basis of B-H curve involving any three points mentioned in level-1 (04)	Correctly explaining material on basis of B-H curve involving any two points mentioned in level-1 (03)	Correctly explaining material on basis of B-H curve involving any one point mentioned in level-1 (02)	Some relevant information (01)	Wrong answer (0)
	B-H curve graph	Correct labeled figure (01)	Partially correct (0.5)	Wrong answer (0)			

Note: All the markers must know the solutions of all the question items of the question paper before starting marking.

RUBRICS: HSSC 1st ANNUAL EXAMINATION 2024
SUBJECT: PHYSICS HSSC-II (Paper-B)

Q.#/Part #	Criteria	Level 1 (Marks)	Level 2(Marks)	Level 3 (Marks)	Level 4 (Marks)	Level 5 (Marks)	
2(i)	Define 'Magnetic Flux' and write its units.	Correctly writing definition and its SI unit "weber (Wb)" (1.5)	Correctly writing only definition (01)	Correctly writing SI unit only or any relevant information (0.5)	Wrong answer (0)		
	Define 'Magnetic Flux density' and write its units.	Correctly writing definition and its SI unit "tesla (T)" (1.5)	Correctly writing only definition (01)	Correctly writing SI unit only or any relevant information (0.5)	Wrong answer (0)		
OR 2(i)	Explaining the reason of more dissipation of energy for steel as compared to iron	Correctly explaining reason e.g. large hysteresis loop area with graph etc (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)		
2(ii)	Stating the Wein's displacement law and writing its mathematical equation	Correctly stating the law and writing its correct equation (03)	Only correct statement (02)	Correctly writing equation OR some relevant information (01)	Wrong answer (0)		
OR 2(ii)	Prove that $E = -\frac{\Delta V}{\Delta r}$	Correct proof (03)	Correctly writing any two steps (02)	Some relevant step (01)	Wrong answer (0)		
2(iii)	Differentiating between controlled and uncontrolled nuclear chain reactions.	Correctly writing any two differences (02)	Partially correct (01)	Wrong answer (0)			
	Method to control the chain reaction	Correctly describing the method (01)	Partially correct (0.5)	Wrong answer (0)			
OR 2(iii)	Explaining the reason to keep the base thin and lightly doped in a transistor	Correctly explaining the reason for making thin base and reason for its lightly doped (03)	Correctly explaining reason either for making thin base or lightly doped (02)	Some relevant information (01)	Wrong answer (0)		
2(iv)	Distinguishing between N-type semiconductor and P-type semiconductor.	Correctly writing any three differences (03)	Correctly writing any two differences (02)	Correctly writing any one difference (01)	Some relevant information (0.5)	Wrong answer (0)	
OR 2(iv)	Calculating the longest wave length of radiation for the Lyman series of hydrogen spectra.	Correct calculation with correct answer i.e λ = 121.6nm (03)	Partially correct (02)	Some relevant step (01)	Wrong answer (0)		

2(v)	Differentiate "Curie temperature" and "Critical temperature".	Correct definitions of curie temperature and critical temperature with one example of each or brief explanation of both (03)	Correct definition and example OR brief explanation of either curie temperature or critical temperature (02)	Some relevant information (01)	Wrong answer (0)		
OR 2 (v)	Explaining the capacitor discharge ignition system works.	Explaining the working of capacitor discharge ignition system (02)	Partially correct (01)	Some relevant steps (0.5)	Wrong answer (0)		
	Enlistment of its uses.	Writing any two uses (01)	Writing any one use (0.5)	Wrong answer (0)			
2(vi)	Briefly explaining resistivity.	Correct explanation of resistivity briefly. OR Correctly Defining the resistivity. (01)	Partially correct (0.5)	Wrong answer (0)			
	Resistivity depending upon temperature.	Correctly relating resistivity with temperature (02)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)		
OR 2(vi)	Conversion of galvanometer into voltmeter	Correctly explaining the Conversion of galvanometer into voltmeter (02)	Partially correct (01)	Some relevant information (0.5)	Wrong answer (0)		
	Circuit diagram	Correct labeled circuit diagram (01)	Partially correct (0.5)	Wrong answer (0)			
2(vii)	Reasoning of the production of eddy currents and Identification of their heating effects.	Correctly explaining the reason of the production of eddy current and its heating effects (03)	Partially correct proof (02)	Some relevant information (01)	Wrong answer (0)		
OR 2(vii)	Explanation of reason of the Geiger-Muller counter detects and counts radiation.	Correctly Explaining the reason of the Geiger-Muller counter detects and counts radiation. (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)		
2(viii)	In transformer, explaining the reason of using laminated iron core instead of solid one.	Correctly Explaining the reason of laminated iron core is used in transformer i.e.reduce eddy currents , minimize hysteresis loss and improve efficiency etc. (03)	Partially correct (02)	Some relevant step (01)	Wrong answer (0)		
OR 2(viii)	A coil having a resistance of 10 Ohm and an inductance of 32mH is connected to 220V, 50Hz AC supply. Calculate current passing through the coil.	Correct calculation of current with correct answer in SI units i.e I = 12.5A (03)	Partially correct (02)	Some relevant step (01)	Wrong answer (0)		
2(ix)	Defining peak value of	Correctly defining peak value	Partially correct (0.5)	Wrong answer			

	sinusoidal current	(01)		(0)			
	Defining effective value of sinusoidal current.	Correctly defining effective value (01)	Partially correct (0.5)	Wrong answer (0)			
	Writing the relation between peak value and effective value of sinusoidal current	Correctly writing the relation (01)	Partially correct (0.5)	Wrong answer (0)			
OR 2(ix)	Differentiating Paramagnetic and Diamagnetic materials with one example each.	Correctly writing any two differences with one example of each (03)	Correctly writing any two differences OR one difference with one example of each (02)	Some relevant step (01)	Wrong answer (0)		
2(x)	Briefly explaining working of transistor as a switch.	Correct explanation of transistor as open switch and close switch (03)	Partially correct i.e. either correctly explaining any one aspect (02)	Some relevant information (01)	Wrong (0)		
OR 2(x)	Briefly explaining "Meta-stable state" for LASER action	Correctly explaining meta stable state for LASER (1.5)	Partially correct explanation (01)	Some relevant information (0.5)	Wrong (0)		
	Briefly explaining "Population inversion" for LASER action"	Correctly explaining Population Inversion for LASER (1.5)	Partially correct explanation (01)	Some relevant information (0.5)	Wrong (0)		
2(xi)	Calculating de-Broglie wave length of an electron having KE=1200 keV.	Correct calculation with correct answer i.e $\lambda = 1.27 \times 10^{-11}$ m (03)	Partially correct (02)	Some relevant step (01)	Wrong answer (0)		
OR 2(xi)	Differentiating between Hadrons and Leptons.	Correctly writing any two differences with examples (03)	Correctly writing any two differences OR one difference with one example of each (02)	Some relevant step (01)	Wrong answer (0)		
2(xii)	Calculation of energy released when 0.5kg of U-235 undergoes fission reaction. (If the disintegration energy per event is Q=208Mev.)	Correct calculation with correct answer i.e $E = 2.66 \times 10^{26}$ Mev (03)	Partially correct (02)	Some relevant step (01)	Wrong answer (0)		
OR 2(xii)	Defining alpha factor and beta factor	Correctly definitions of alpha factor and beta factor (01)	Correct definition of any one (0.5)	Wrong answer (0)			
	Deriving the relation between alpha and beta factors	Correct derivation (02)	Partially correct (01)	Wrong answer (0)			

2(xiii)	Briefly explaining the principle of metal detector with circuit diagram.	Correctly explaining the working principle of metal detector (02)	Partially correct (01)	Wrong answer (0)			
	Diagram of metal detector	Correct labelled diagram (01)	Partially correct (0.5)	Wrong answer (0)			
OR 2(xiii)	Defining electron volt(eV)	Correct definition (01)	Partially correct (0.5)	Wrong answer (0)			
	Deriving relation between electron volt and joule	Correct derivation (02)	Partially correct (01)	Wrong answer (0)			
2(xiv)	Briefly explaining the condition under which a source (Battery or cell) gives maximum power output	Correctly writing the condition (e.g. when internal resistance of the cell/battery is equal to load then output power of the cell/battery will be maximum) with mathematical relation (03)	Correctly stating the condition (02)	Correctly writing the mathematical relation (01)	Wrong answer (0)		
OR 2(xiv)	Stating Lenz's law.	Correctly stating the Lenz's law (01)	Partially correct (0.5)	Wrong answer (0)			
	Prove that Lenz's law is according to law of conservation of energy.	Correctly explaining that Lenz's law is according to law of conservation of energy with example (02)	Partially correct (01)	Wrong answer (0)			
Q. 3	State postulates of Bohr's atomic model.	Correctly stating three postulates (03)	Correctly stating two postulates (02)	Correctly stating any one postulate (01)	Wrong answer (0)		
	Showing that energy of the electron in H-atom is quantized.	Correctly calculating (i) K.E., (ii) P.E. (iii) total energy (04)	Correctly calculating any two points mentioned in level-1 (03)	Correctly calculating any one point mentioned in level-1 (02)	Some relevant information (01)	Wrong answer (0)	
OR Q 3	Deriving an expression for charge to mass ratio for an electron	Correctly deriving the formula (05)	Sufficiently correct formula i.e.at least four correct steps (04)	Partially correct i.e. at least three correct steps (03)	Correctly writing at least two steps (02)	Any relevant mathematical step (01)	Wrong answer (0)
	Calculation of charge to mass ratio of an electron	Correctly calculating charge to mass ratio (02)	Partially correct (01)	Wrong answer (0)			
Q.4	Defining the photoelectric effect	Correct definition (01)	Partially correct (0.5)	Wrong answer (0)			

	Explaining the failure of classical physics to explain photoelectric effect	Correctly explaining any two failures (02)	Correctly explaining any one failure (01)	Partially correct (0.5)	Wrong answer (0)	
	Deriving Einstein photoelectric equation.	Correctly deriving the photoelectric effect equation (04)	Sufficiently correct derivation i.e. at least four correct steps (03)	Partially correct derivation e.g. at least three correct steps (02)	Any relevant mathematical step (01)	Wrong answer (0)
OR Q.4	Defining potentiometer	Correct definition (01)	Partially correct definition (0.5)	Wrong answer (0)		
	Explaining principle of potentiometer	Correctly writing principle (01)	Partially correct principle (0.5)	Wrong answer (0)		
	Explaining construction of potentiometer.	Correctly writing the construction (01)	Partially correct construction (0.5)	Wrong answer (0)		
	Explaining the working of potentiometer	Correctly explaining working of potentiometer e.g. to find unknown emf of a cell, as a potential divider etc with labelled circuit diagrams (03)	Sufficiently correct explanation of working without circuit diagram (02)	Partially correct working (01)	Wrong answer (0)	
	Enlisting uses of potentiometer	Enlisting any two uses e.g. it is used as variable resistor, potential divider, to find unknown emf of a cell etc (01)	Writing any one use (0.5)	Wrong answer (0)		
Q. 5	Stating and explaining Gauss's law.	Correctly stating the law and explaining it mathematically (03)	Partially correct (02)	Only correct statement (01)	Wrong answer (0)	
	Finding electric field intensity between two oppositely charged parallel plates	Correct derivation with figure (03)	Correct derivation (02)	Some relevant mathematical steps or correct figure (01)	Wrong answer (0)	
OR Q. 5	Explaining the phenomenon of self-inductance of a coil.	Correctly defining and explaining with figure or correctly deriving the formula (03)	Partially correct (02)	Some relevant information (01)	Wrong answer (0)	

	SI unit of self inductance	Correctly writing the unit i.e. henry (H) (01)	Wrong answer (0)				
	Writing the factors on which self-induction depends	Correctly writing at least two factors e.g. number of turns of the coil, nature of material of core, Cross sectional area of the coil length of coil, frequency etc (02)	Correctly writing any one factor (01)	Some relevant information (0.5)	Wrong answer (0)		
Q. 6	Explaining the RLC series resonance circuit	Correctly describing the RLC circuit (02)	Partially correct (01)	Wrong answer (0)			
	Draw its impedance diagram.	Correctly drawing the labelled figure (01)	Partially correct (0.5)	Wrong answer (0)			
	Writing properties of RLC circuit	Correctly writing any three properties (03)	Correctly writing any two properties (02)	Correctly writing any one properties (01)	Wrong answer (0)		
OR Q. 6	Brief explanation of 'half-life' of a radio-active element	Correct definition with short explanation (02)	Partially correct (01)	Wrong answer (0)			
	Showing that $T_{\frac{1}{2}} = 0.693/\lambda$	Correct proof (04)	Sufficiently correct i.e. at least three correct steps (03)	Partially correct with at least two correct mathematical steps (02)	One correct mathematical step (01)	Wrong answer (0)	

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