

- xvii. In ___ half-lives $\frac{7}{8}$ of a radio-active sample decays completely.
- | | | | |
|----|---|----|---|
| A. | 1 | B. | 2 |
| C. | 3 | D. | 4 |

For Examiner's use only

Q. No.1: Total Marks:

17

Marks Obtained:



Federal Board HSSC-II Examination
Physics Model Question Paper
(Curriculum 2000 – PTB)

Time allowed: 2.35 hours

Total Marks: 68

Note: Sections 'B' 'C' and 'D' comprise pages 1-2 and questions therein are to be answered on the separately provided answer book. Answer any seven parts each from section 'B' and section 'C' and any two questions from section 'D'. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION – B ($7 \times 3 = 21$)
(Chapters 12 to 16)

- Q.2 Attempt any SEVEN parts. All parts carry equal marks.
- How can we check the reliability of concrete bridges made of carbon fibers?
 - Why do we connect voltmeter in parallel in a circuit?
 - How can we check the continuity of a circuit by using an ohmmeter?
 - Increase of cross-sectional area of a material decreases its resistance. Explain.
 - What changes would be required to convert a DC- motor into DC- generator?
 - Can a step-up transformer be used to increase output power level? Explain.
 - What are 'Phantom Magnets'?
 - Using the formula $\vec{F} = I \vec{L} \times \vec{B}$ define Tesla.
 - Electric lines of force never cross. Why?
 - How the reception of a particular radio station selected on your radio set?

SECTION – C ($7 \times 3 = 21$)
(Chapters 17 to 21)

- Q.3 Attempt any SEVEN parts. All parts carry equal marks.
- What are 'Polymers'? Explain.
 - Differentiate between brittle and ductile materials.
 - How can we use transistor as a switch?
 - Why don't we observe Compton effect with visible light?
 - How can we control intensity and energy of X-ray beam from a production unit?
 - What is the possible number of lines if ground-state electron in hydrogen is excited to 5th level? Answer through illustration.
 - How can Insulator nature of material be explained using Band Theory of Solids?
 - What is the Principle of Virtual Ground?
 - Show that at 1000 m/s speed the increase in mass of a body is not quite noticeable.
 - What do we mean by 'Mass Defect' for a nucleus?

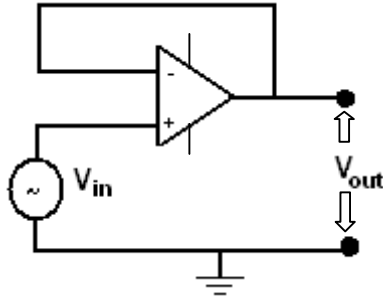
SECTION – D ($2 \times 13 = 26$)

Note: Attempt any TWO questions. All questions carry equal marks.

- Q.4 a. What is an Ac-generator. Describe its principle, construction and working. (6)

- b. An ideal step-down transformer is connected to 240 V AC supply. Find the current in the primary and the transformation ratio if we wish to operate a 20 V, 40 W lamp? (4)
- c. How polarization of dielectric results in increase of capacity of a capacitor? (3)

- Q.5
- a. What is a capacitor? Derive an expression for the capacitance of a parallel plate capacitor. (6)
 - b. What do we mean by the sensitivity of a galvanometer? How can it be increased? (4)
 - c. Find the gain of the circuit shown. (3)



- Q.6
- a. What is Photoelectric Effect? What were its chief features which couldn't be explained by classical physics? How was Einstein able to explain it? What was the relation he gave between incident energy and the energy of emitted electron? (6)
 - b. What is the de-broglie wave-length of an electron with 1200 eV kinetic energy? (4)
 - c. Explain why Laser action could not occur without population inversion between atomic levels? (3)