

Note: Time allowed for section B and C is 2 hours and 40 minutes.

SECTION "B"

Marks: 32

II. Attempt any EIGHT Parts out of the following. Each Part carries equal marks.

- i. Show that the oscillatory motion of mass-spring system is SHM.
- ii. Why sound produced by a simple pendulum is not heard ?
- iii. State and explain laws of refraction with diagram .
- iv. Briefly describe power of lens and its unit .
- v. How can we protect ourselves during a thunderstorm ?
- vi. What is Kilowatt-hour ? How is it related to joule ?
- vii. Define electric power . Show that  $P=IV$  .
- viii. Why does a compass needle points north ?
- ix. What are logic gates ? Describe the operation of AND gate by drawing its truth table .
- x. Write down four uses of internet in daily life.
- xi. What is meant by beta decay ? Explain briefly .

SECTION "C"

Marks: 21

Note: Attempt any THREE questions of the following. Each question carries equal Marks.

- III. (a) What is intensity level ? Describe the decibels scale for the intensity of different sound levels. 4
- (b) Determine the mass of a vertical mass-spring system if it oscillates with a period of 2s and has the spring constant  $K=20\text{Nm}^{-1}$ . 3
- IV. (a) State and explain Coulomb's law . 4
- (b) Three resistors  $5\ \Omega$  ,  $10\ \Omega$  and  $20\ \Omega$  are connected in parallel across a 90 V battery. What is the total current flowing in the circuit ? 3
- V. (a) What are cathode rays ? How are cathode rays produced ? 4
- (b) A 1.5 m long wire carries a current of 5A at right angle to a uniform magnetic field of 0.04T. What is the force exerted on the wire ? 3
- VI. (a) Explain half life of radioactive elements ? 4
- (b) How many neutrons are contained in a gold nucleus 3