

## Physics

**Note:** Time allowed for Section-B and Section-C is 2 Hours and 45 minutes.

### SECTION-B

**Q2:** Answer any EIGHT parts. Each part carries FOUR marks.

- i) Define loudness and list three factors affecting the loudness of sound.
- ii) Define echo. In which medium air or water, an echo is heard sooner? Why?
- iii) Prove through diagram  $\theta_i = \theta_r$  (Where  $\theta_i$  = angle of incidence and  $\theta_r$  = angle of reflection)
- iv) Explain  $v = \frac{W}{q}$  and define volt.
- v) State and explain Ohm's law.
- vi) The current of 5A flows through a resistor of  $7\Omega$  for 3 minutes. Calculate the heat energy produced in resistor.
- vii) Define A.C generator and describe the role of coil in the operation of A.C generator.
- viii) Define CRO and describe the function of deflection system in CRC.
- ix) Explain how a fax machine transmits documents over long distances.
- x) Write symbol, composition, charge and effect on parent nucleus of  $\alpha$  particle.
- xi) Describe nuclear fission. Which particle is produced during fission?

### SECTION-C Marks: 16

**Note:** Attempt any THREE questions. All questions carry equal marks.

- Q3: (a) Explain the conditions for a simple pendulum to execute Simple Harmonic Motion.  
 (b) Determine the magnitude of the restoring force on a pendulum bob of mass 125g, which has been displaced to an angle of  $10^\circ$  from the vertical. ( $g=9.8 \text{ m/s}^2$ )
- Q4: (a) Discuss the role of lenses in the correctness of near-sightedness and far-sightedness.  
 (b) A biologist with a near-point distance  $N=25 \text{ cm}$  examines an insect through a lens whose focal length is 4.4cm. Find the angular magnification when image produced at (a) near point (b) infinity.
- Q5: (a) State and explain Coulomb's law.  
 (b) Two point charges  $q_1=7.8 \mu\text{C}$  and  $q_2=3.5 \mu\text{C}$  are placed at a distance of 10cm. Find the Coulomb's force acting on each charge.
- Q6: (a) Explain right hand rule for finding the direction of force experienced by current carrying conductor in magnetic field also, derive the formula for magnetic force.  
 (b) A 0.8m long wire carries a current of 6.5 A, at right angle to uniform magnetic field of 0.07 T. Determine the force exerted on the wire.