

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

Section - B

Marks: 32

Answer any EIGHT parts. Each part carries FOUR marks.

- Q.1 Differentiate between transverse and longitudinal waves.
- Q.2 What do you mean by audible frequency range?
- Q.3 Why sound cannot be heard on moon?
- Q.4 Define power of lens and its unit.
- Q.5 Define electrical resistance. What are the factors upon which it depends?
- Q.6 If the speed of light in Kerosene oil is $2.0^8 \times 10^8$ m/s, calculate the index of refraction.
- Q.7 Define the unit of electrical energy. Show that 1 KWh = 3.6 MJ.
- Q.8 Differentiate between electric and magnetic fields. 0.055
- Q.9 What is the function of an accelerating anode in an electron gun?
- Q.10 Briefly explain e-mail and internet.
- Q.11 Write down four applications of radioisotopes.

Section - C

Marks: 21

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

- Q.12 (a) Explain the terms echo and reverberation. Calculate the minimum distance for echo to be heard. (4)
- (b) The P.D across the plates of a capacitor is 500 V. the charge on each plate is 0.02 C. What is the capacitance of the capacitor? (3)
- Q.13 (a) What is series combination of capacitors? Determine the equivalent capacitance for three capacitors C_1 , C_2 and C_3 connected in series. (4)
- (b) Calculate the period and frequency of a propeller on a plane if it completes 250 cycles in 5 s. (3)
- Q.14 (a) Describe the construction and working of AC generator. (4)
- (b) What is the resistance of wire when the current through it is 2.0 A and the voltage across its ends is 3.0 V? (3)
- Q.15 (a) Define and explain half life of a radioactive element. 0.055 (4)
- (b) How much work is done in moving a charge of 3 C from a point at 118 V to a point at 138 V in an electric field? (3)