

Q.4 (A) Attempt any ONE.

4

1. Calculate the numerical aperture of a step index fiber for an optical fiber that has a core of refractive index 1.5 and cladding of index 1.48. Also determine the maximum angle for entrance of light if the fiber is put in air.
2. Explain the factors affecting the acoustic quality of building.

(B) Attempt any ONE.

4

1. A substance with FCC lattice has density $6250 \frac{\text{Kg}}{\text{m}^3}$ and molecular weight 60.2. Calculate the lattice parameter 'a'.

Given: Avogadro number = $6.02 \times 10^{26} (\text{Kg} - \text{Mole})^{-1}$

2. Draw crystal lattice planes $(\bar{2}, 3, \bar{1})$ and $(\bar{1}, \bar{1}, 1)$ in a unit cell of cubic System.

(C) Attempt any ONE.

4

1. Explain Ferromagnetic materials with an example.
2. Explain the phenomenon of transmission taking place when light is incident on matter.
