

## MODEL QUESTION

Dr. Shyama Prasad Mukherjee University, Ranchi

B.Sc. Electronics

Semester-VI

Paper- XIII

---

\*\*\*\*\*

Group: A

Short answer type

1. What are Maxwell's field equations?
2. Define and explain Poynting vectors.
3. What are the characteristics and fundamental parameters of optical fiber?
4. Show that speed of E.M.W. in free space is  $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$ .
5. Why does TEM wave does not exist inside the waveguide.
6. Derive an expression for reflection coefficient.

Group: B

Long answer type

1. State and prove poynting theorem.
2. Derive line transmission equations and hence solve them.
3. What is optical fiber? How an electromagnetic wave is transmitted through it? Discuss.
4. Discuss the propagation of electromagnetic wave equation for a medium having finite  $\mu$  and  $\epsilon$  but  $\sigma = 0$ .
5. Write short note on any two.
  - a. Standing wave ratio.
  - b. Smith chart.
  - c. Line impedance and admittance in microwave transmission line