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**School of University Polytechnic**

Diploma in Civil Engineering  
Mid Term Examination - May 2024

Duration : 90 Minutes  
Max Marks : 50

**Sem II - N1DF201B - Applied Physics II**General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Explain different properties of light. K2 (2)
- 2) Define optical fibre. How does light propagate along a fibre? K1 (3)
- 3) Define electric lines of forces. Explain the properties of electric lines of forces. K2 (4)
- 4) Explain in detail the phenomenon of total internal reflection. Define critical angle. For total internal reflection to occur what is the value of incident angle? K2 (6)
- 5) Illustrate laws of refraction. Discuss the nature of refraction if angle of incident is equal to angle of refracted. K3 (6)
- 6) Illustrate basic principle of optical fibre. Discuss the following in details: (a) Single Mode Fiber (b) Multimode Fiber. K3 (9)
- 7) Two capacitors of capacitance  $C_1 = 6 \mu F$  and  $C_2 = 3 \mu F$  are connected in series across a cell of emf 18 V. Calculate: (i) The equivalent capacitance (ii) The potential difference across each capacitor (iii) The charge on each capacitor K4 (8)
- 8) Analyze Snell's law. Light traveling through an optical fibre ( $n=1.44$ ) reaches the end of the fibre and exits into air. (a) If the angle of incidence on the end of the fibre is  $30^\circ$ , what is the angle of refraction outside the fibre? (b) How would your answer be different if the angle of incidence were  $50^\circ$ ? K4 (12)

**OR**

Analyze interference Phenomenon of light. Sodium light of wavelength  $5890 \text{ \AA}$  passes through two narrow slits 2mm apart. The interference pattern is seen at a distance of 1.25m away from the centre of the slits. Determine the fringe width. K4 (12)