Total No. of Questions : 4]

SEAT No. :

PB3

[Total No. of Pages : 2

[6267]-3
F.E. (All Branches) (Insem)
ENGINEERING PHYSICS
(2019 Pattern) (Semester - II) (107002)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q1 or Q2 and Q3 or Q4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, jf necessary.***

Q1) a) What is wedge shaped thin film? Draw a neat and labelled diagram showing interference in wedge shaped thin film. Explain its use to test optical flatness. **[6]**

b) For a single slit, diffraction, write down the expression for resultant amplitude. Using this expression derive the condition for : **[5]**

i) Principal maxima

ii) Minima

c) Polarizer and analyzer are set with their polarizing axes parallel so that intensity of transmitted light is maximum. Through what angle should either be turned so that intensity of transmitted light becomes. **[4]**

i) 50%

ii) 25% of the maximum intensity

OR

Q2) a) What is double refraction? Explain Huygen's theory of double refraction for uniaxial crystal. **[6]**

b) Explain application of interference as anti-reflection loading. Derive the condition for minimum thickness of the anti-reflection loading. **[5]**

c) A grading has 6000 lines km. For a wave length 4500Aº. What is the maximum order that is visible. **[4]**

P.T.O.

Q3) a) Explain principle, construction and working of CO_2 laser. **[6]**

b) What is optical fiber? Distinguish between SHP index and graded index optical fiber. (Any 4 points) **[5]**

c) Calculate numerical aperture and acceptance angle for an optical fiber whose core and cladding has refractive indices 1.59 and 1.54 respectively. **[4]**

OR

Q4) a) Explain the process of fiber optic communication system with block diagram. State any two advantages of optical fiber communications. **[6]**

b) What is holography? Explain recording of hologram using laser. **[5]**

c) State and explain any four characteristics of laser. **[4]**