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Code No. : 11026 O

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (CBCS) I-Semester Supplementary (Old) Examinations, June/July-2019

Engineering Physics
(Common to all branches)

Time: 3 hours

Max. Marks: 60

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Define the Relaxation time and Quality factor.
2. Mention the three important cases of superposition of waves.
3. Why coherent light source is required to produce a consistent interference pattern?
4. Light of wave length 600 nm falls normally on a plane transmission grating having 18000 lines in 3 cm. Find (a) angle of diffraction for first order and (b) the highest order that can be observed.
5. Distinguish step index and GRIN Fibers.
6. Optical power of 2mw is injected into optical fibre of length 200m. If the power emerging from the other end is 0.6 mw, Calculate the fibre attenuation.
7. Distinguish Spontaneous and Stimulated emission of radiations.
8. What is a Meta stable state?
9. What is phase lead and phase lag in a.c. circuits? Explain with one example.
10. What is the modification done by Maxwell to ampere's law?

Part-B (5 × 8 = 40 Marks)

11. a) Define and Derive equations for forced oscillations and discuss the cases. [6]
b) A damped oscillator starting from rest reaches a first amplitude of 500mm. It reduces to 50 mm after 100 oscillations. The time period is 2.3 sec. Find the damping constant. [2]
12. a) Describe the construction and working of Nicol's Prism. [5]
b) In a Newton's ring experiment the diameter of 15th ring was found to be 0.59cm and that of the 5th ring was 0.336cm. If the radius of curvature of the Plano-convex lens is 100cm, calculate the wavelength of light used. [3]
13. a) Define acceptance angle and numerical aperture and derive an equation in terms of refractive indices of core and cladding. [5]
b) A step-index fiber has a refractive index of 1.44 and the cladding refractive index of 1.41 Find (i) the numerical aperture (ii) relative refractive index difference and the acceptance angle. [3]
14. a) Describe the construction and working of Nd: YAG laser. [5]
b) Explain the principle of Holography. [3]
15. a) Alternating e.m.f is applied to a circuit having L, C & R in series. Derive an expression for resonance frequency. [6]
b) What is the relation between electric field, magnetic field and direction of propagation of an electromagnetic wave? [2]

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- 16. a) Compare free, damped and forced oscillations. [4]
- b) Write a short notes on dispersive power and resolving power of a grating. [4]

- 17. Answer any *two* of the following:
- a) Analyse the merits and demerits of fibers. [4]
- b) Write a short notes on different engineering applications of laser. [4]
- c) Derive an equation for Poynting Vector. [4]

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