

I/IV B.Tech. DEGREE EXAMINATIONS, NOV/DEC-2017**First Semester****CSE/ECE/EEE****ENGINEERING PHYSICS-I****Time: Three Hours****Maximum marks:60****Answer Question No.1 Compulsory****12X1=12 M****Answer ONE Question from each Unit****4X12=48 M**

1.
 - a) Give the properties of ultrasonic waves.
 - b) Why is the central spot in Newton's rings seen reflected light dark?
 - c) What is the formula for radius of curvature in Newton's rings experiment?
 - d) Comment on 'polarisation requires that vibrations are transverse'.
 - e) What is meant by elliptically polarised light?
 - f) Give applications of lasers in engineering.
 - g) What does pumping mean?
 - h) What are the industrial applications of hologram?
 - i) What are the main sections of an optical fiber?
 - j) What are two materials generally used for fabricating optical fibers?
 - k) Define electric field.
 - l) What is an inductance?

UNIT-I

2.
 - a) What are ultrasonic waves and infrasonic waves?
 - b) Explain piezoelectric effect. Describe the Piezoelectric crystal.
 - c) Discuss general applications of ultrasonic waves?

(OR)

3.
 - a) Explain the phenomenon of interference. What are conditions to get the sustained interference of light?
 - b) Derive an expression for interference in thin films due to reflection.

UNIT-II

4.
 - a) What is meant by diffraction of light? Explain it on the basis of Huygens wave theory.
 - b) Discuss diffraction due to single slit. Draw the intensity distribution curves and give conditions for bright and dark fringes in single slit diffraction pattern.

P.T.O

(OR)

5. a) Explain phenomenon of polarisation. How does the polarised light differ from the ordinary light?
b) What are quarter wave and Half wave plate? Derive expressions for their thicknesses.

UNIT-III

6. a) Define the terms: life time, metastable state and pumping.
b) Explain the main components of any laser system. What are the various applications of lasers.

(OR)

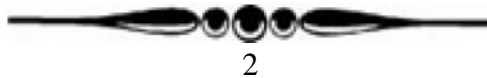
7. a) Describe the construction of optical fiber.
b) Explain different types of optical fibers.

UNIT-IV

8. a) Write Coulombs law of electrostatics. Deduce Coulombs law from Gauss law.
b) Explain what is self induction? Define coefficient of self induction.

(OR)

9. a) Write the Maxwell's equations in differential and integral forms.
b) Under what conditions will electrical resonance occur?



I/IV B. Tech. DEGREE EXAMINATIONS, JUNE / JULY 2017**FIRST SEMESTER****BT / CSE / ECE / EEE****ENGINEERING PHYSICS - I**Time : **Three Hours**Maximum Marks : **60****Answer Question No. 1 Compulsory.****12x1=12 M****Answer ONE question from each Unit.****4x12=48 M**

1. Write the following in brief.
 - a) What is acoustic grating ?
 - b) Define the Interference of light.
 - c) What is cosine law ?
 - d) What is a diffraction grating ?
 - e) Define double refraction.
 - f) What is half wave plate ?
 - g) What is a LASER ?
 - h) What is the basic principle of holography ?
 - i) Define acceptance angle in fiber optics.
 - j) State Lenz's law.
 - k) Define Mutual Inductance.
 - l) What is displacement current ?

UNIT - I

2. a) Explain how ultrasonics are produced by piezo electric oscillator method.
b) Explain pulse echo technique.

(OR)

3. a) Describe Newton's rings experiment to determine the wavelength of monochromatic light with necessary theory.
b) What are the conditions necessary for obtaining interference fringes ?

P.T.O.

UNIT - II

4. a) What is the phenomenon of diffraction of light ?
b) Give the theory of fraunhoffer diffraction due to a single slit and hence obtain the condition for primary and secondary maxima.

(OR)

5. a) Explain polarization by reflection.
b) Discuss the construction and working of a Nicol prism and how it is used as a polarizer and analyzer ?

UNIT - III

6. a) Explain the principle, construction and working of a Ruby (Solid-state) Laser.
b) What are the applications of holography.

(OR)

7. a) Explain structure of optical fiber and describe various types of optical fibers.
b) Derive an expression for numerical aperture in fiber optics.

UNIT - IV

8. a) State and prove Gauss's law in Electricity.
b) Derive Coulomb's law from Gauss's law.

(OR)

9. a) Write Maxwell's equations in integral form.
b) Derive the wave equation for electromagnetic fields using Maxwell's electromagnetic equation.

