I/IV B.Tech. (Supple). DEGREE EXAMINATIONS, APRIL/MAY- 2016
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.   a. What are Ultrasonic waves?

      b. What is acoustical grating?

      c. What is the Stokes principle?

      d. Write application of Michelson interferometer?

      e. What is the formula for wavelength of light with diffraction grating?

      f. What is plane polarized light?

      g. What do you mean by laser?

      h. What is pumping in connection with Lasers?

      i. What is the structure of an optical fibre?

      j. What is the acceptance angle in fibre optics?

      k. Mention Gauss's law for magnetism

      l. Write expression for the energy stored in a magnetic field.

UNIT-I

2.   a. Obtain the conditions for interference of light reflected by a thin parallel film.

      b. Describe Newton's rings method for measuring the wavelength of monochromatic

          light.

(OR)

3.   a. Describe an acoustic grating and show it can be used to determine the velocity of

          ultrasonic waves in liquids.

      b. Mention the applications of ultrasonics.

UNIT-II

4.   a. What is meant by diffraction of light? Distinguish between Fraunhofer and Fresnel

          diffraction.

      b. Describe the method of producing plane polarized light by reflection. Explain

          Brewster's law.

P.T.O

(OR)

5.   a. Epxlain the production and detection of elliptical and circular polarized lights.

         b. Mention applications of polarization.

UNIT-III

6.   a. Explain the principle Laser.

         b. Describe the construction and working of ruby laser with neat sketches.

(OR)

7.   a. What is holography? Explain construction and working of hologram

         b. Write down the applications of holography.

UNIT-IV

8.   a. Derive Coulomb's law from Gauss's law.

         b. Derive Maxwell's equations in differential form.

(OR)

9.   a. Obtain resonance condition for an LCR circuit with A.C. supply.

         b. Explain what is meant by displacement current.

Total No. of Questions : 09]   [Total No.of Pages : 02

I/IV B. Tech. DEGREE EXAMINATIONS, DECEMBER - 2016
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 Piezo electric effect ?

  b)   What are coherent sources of light ?

  c)   What is Stoke's principle ?

  d)   Define diffraction of light.

  e)   What is quarter waveplate ?

  f)   Define circular polarization.

  g)   Define population inversion.

  h)   What is numerical aperture ?

  i)   What is the basic principle of holography ?

  j)   State Faraday's law of electromagnetic induction.

  k)   Define Self Inductance.

  l)   Recording.

UNIT - I

2. a)   What are Ultrasonics ? Explain how they are detected by Acoustic grating method.

  b)   Explain ultrasonic imaging.

(OR)

3. a)   What is Interference of light ?

  b)   Explain the principle, construction and working of a Michelson's Interferometer.

P.T.O.

UNIT - II

4. a)   Discuss the theory of fraunhoffer diffraction due to a single slit.

    b)   Hence obtain the condition for primary and secondary maxima. Using this obtain intensity distribution curve.

(OR)

5. a)   Explain double refraction in uniaxial crystals.

    b)   Discuss the production and detection of circular and elliptical polarization.

UNIT - III

6. a)   What are the basic requirements of a laser.

    b)   Explain the principle, construction and working of a He-Ne-laser.

(OR)

7. a)   What is hologram ? Discuss the recording and reproduction of hologram.

    b)   What are the applications of fiber optics.

UNIT - IV

8. a)   Derive an expression energy for stored in a magnetic field.

    b)   Derive the wave equation for electromagnetic fields using Maxwell's electromagnetic equation and hence obtain the expression for velocity of electromagnetic wave in free space.

(OR)

9. a)   Write down Maxwell's equations in integral form.

    b)   Derive an expression for resonance condition in series LCR circuit containing A.C.