



**B.E. / B.TECH DEGREE EXAMINATIONS: JUNE 2015**

(Regulation 2009)

First Semester

**PHY101:ENGINEERING PHYSICS**

(Common to all Branches)

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

- Existence of sound in a room even though the source of sound is cut off is called
  - scattering
  - infrasonics
  - phon
  - Reverberation
- High frequency ultrasonic waves can be produced by the following oscillator
  - Colpitts oscillator
  - Galton's whistle
  - Piezoelectric oscillator
  - magnetostriction oscillator
- The planes (112) and (224) are
  - intersecting at an angle other than  $90^\circ$
  - parallel to each other
  - intersecting at an angle  $120^\circ$
  - perpendicular to each other
- The process of recording the thermal images of the surface of specimen under study is known as
  - thermography
  - cryothermometer
  - fluoroscopy
  - holography
- When unpolarised light is passed through a Nicol prism or pile of plates, the transmitted beam is
  - circularly polarised
  - plane polarised
  - elliptically polarised
  - unpolarised
- is the property of a material by which it becomes a doubly refracting one when it is mechanically strained.
  - thrhoelasticity
  - photoelasticity
  - photoplasticity
  - Birefringence
- The law which shows that the product of the wavelength corresponding to maximum energy and absolute temperature is a constant is known as
  - Rayleigh – Jeans law
  - Maxwell – Boltzmann law
  - Wien's displacement law
  - Stefan – Boltzmann law



(OR)

- b) (i) Apply the liquid penetrant method of non-destructive testing to analyze the surface defects present in a material. (10)
- (ii) Give the merits of ultrasonic flaw detector. (4)

23. a) (i) With necessary theory, deduct a mathematical expression to compute the thickness of a thin material by the principle of interference. (10)
- (ii) Represent diagrammatically the different kinds of fringes formed in Michelson's interferometer. (4)

(OR)

- b) (i) Discuss the production and analysis of circularly and elliptically polarized light. (10)
- (ii) Point out the four applications of photoelasticity. (4)

24. a) (i) Explain the theory of Compton effect using quantum theory of radiation. (10)
- List the four applications of photoelectric effect. (4)

(OR)

- b) (i) Bring out four physical significance of the wave function  $\Psi$ . (4)
- (ii) Deduce an expression for the energy of an electron in an infinitely deep potential well having one dimension. (10)

25. a) (i) Describe the construction and working of He-Ne laser with energy level diagrams. (10)
- (ii) Write the special features of CO<sub>2</sub> laser. (4)

(OR)

- b) (i) Distinguish between single and multimode step index fibers. (10)
- (ii) Write a note on medical endoscope. (4)

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