**Reg. No. :** | | | | | | | | | | |

# Question Paper Code: 51003

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

First Semester

Civil Engineering

15UPH103- ENGINEERING PHYSICS

(Common to ALL branches)

(Regulation 2015)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

1. The atoms or molecules are arranged in a irregular fashion is called as CO1- R

   (a) Single crystal (b) Solid (c) Amorphous (d) Poly crystal

2. Identify the given crystal system, $a = b \neq c$ ; $\alpha = \beta = \gamma = 90°$ CO1- App

   (a) Cubic (b) Tetragonal (c) Triclinic (d) Hexagonal

3. Sound waves of frequencies below 20 Hz are termed as CO2- R

   (a) Ultrasonics (b) Audible range (c) Noises (d) Infrasonics

4. What is the basic principle behind the Piezoelectric oscillator CO2- R

   (a)Piezoelectric effect (b) Inverse Piezoelectric effect

   (c) Doppler effect (d) None of these

5. The Superposition of two waves is known as CO3- Ana

(a) Diffraction (b) Interference (c) Reflection (d) Absorption

6. Pumping method employed in Semiconductor laser is CO3- R

(a) Optical pumping (b)Electrical pumping

(c) Electrical discharge method d) Direct pumping

7. Calculate the Compton shift, when the angle of scattering ($\phi$) is Zero CO4- App

(a) 0 (b) 1 (c) 2 (d) 3

8. Show de – Broglie wavelength ($\lambda$) in terms of energy CO4- R

(a) $\lambda = h / 2mE$ (b) $\lambda = h/\sqrt{2mE}$ (c) C. $\lambda = h / \sqrt{eV}$ (d) $\lambda = h/\sqrt{2meV}$

9. Relate the ratio between lateral strain and longitudinal strain CO5- R

(a)Young's modulus (b)Bulk modulus (c) Poisson's ratio (d) All the above

10. Recall the unit of Thermal conductivity CO5- R

(a) $N / m^2$ (b) $\Omega^{-1} m^{-1}$ (c) $W / m^2$ (d) $Wm^{-1}K^{-1}$

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. What are Miller indices and Explain how they are determined? CO1- R (8)

12. Describe Piezoelectric method of producing ultrasonic sound waves with the neat diagram. CO2 -U (8)

13. Show that plane polarized light and circularly polarized lights are special cases of elliptically polarized light. CO3 -App (8)

14. Deduce Schrodinger's time dependent and time independent wave equations. CO4- U (8)

15. What is meant by Cantilever? Derive an expression for the depression produced due to load hanging at the end of the Cantilever beam. CO-5 U (8)

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