**R19**

**Reg. No:**

### SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
**B.Tech I Year I Semester Supplementary Examinations November-2020**
**ENGINEERING PHYSICS**
(Common to CE & AGE)

Time: 3 hours                                                                                   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

## UNIT-I

**1**  **a**  Define dot product of two vectors and write their properties.                                    **8M**
   **b**  Two vectors are given by *A=4j–7k* and *B=5i+3j*, find their dot product.                     **4M**

**OR**

**2**  **a**  State and explain Kepler's laws of planetary motion.                                           **8M**
   **b**  If the Earth be one half of its present distance from the sun, what will be the number   **4M**
of days in a year?

## UNIT-II

**3**  **a**  Define i) Young's modulus ii) Bulk modulus iii) Rigidity modulus iv) Poisson's ratio   **4M**
   **b**  Derive the relation between different elastic moduli.                                          **8M**

**OR**

**4**  **a**  Deduce an expression for energy stored per unit volume in stretched wire.                   **7M**
   **b**  Estimate the work done in stretching a wire of cross section 1.25 $mm^2$ and length 1.9   **5M**
m through 0.14 mm. The Young's modulus of wire is $45 \times 10^9 \, N/m^2$.

## UNIT-III

**5**  **a**  Define: i) absorption coefficient        ii) Open window unit          iii) Sabine.          **3M**
   **b**  Explain the determination of absorption coefficient of a sample using Sabine's   **9M**
formula.

**OR**

**6**  **a**  Describe the piezoelectric effect.                                                              **4M**
   **b**  Explain the production of ultrasonics by piezoelectric method.                                **8M**

## UNIT-IV

**7**  **a**  Define simple harmonic motion. Give three examples.                                           **4M**
   **b**  Derive the equation of motion of simple harmonic oscillator and find its solution.          **8M**

**OR**

**8**  **a**  Explain logarithmic decrement, relaxation time and quality factor of an oscillator.          **9M**
   **b**  The amplitude of a second pendulum falls to one half of its initial value in 150   **3M**
seconds. Calculate the Q factor.

## UNIT-V

**9**  **a**  Describe the classification of nanomaterials with suitable examples.                          **4M**
   **b**  Nanomaterials behave differently in their properties than the bulk materials. Justify.       **8M**

**OR**

**10**  **a**  Describe any one method of fabrication of nanomaterials.                                      **6M**
   **b**  Write any four applications of nanomaterials.                                                 **6M**

*** END ***