Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations August-2021
ENGINEERING PHYSICS
(Common to AGE & CE)

Time: 3 hours   Max. Marks: 60

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

UNIT-I

1 a Define gradient of a scalar field and give its physical significance.   **6M**
   b Show that F = - grad V.   **6M**

OR

2 a Describe the motion of rocket with a neat diagram.   **6M**
   b A rocket starts from rest with an initial mass M0 and its mass at burnt out is M.   **6M**
    Find the ratio of (M0/M) if the speed of rocket is twice the exhaust speed.

UNIT-II

3 a Mention different types of supports.   **8M**

   b Calculate Poisson's ratio for silver.   **4M**
    Given its Young's modulus =7.25x1010 N/m2 and bulk modulus = 11x1010 N/m2

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 mm2 and   **5M**
    length 1.9 m through 0.14 mm. The Young's modulus of wire is 45 x109 N/m2.

UNIT-III

5 a Derive Sabine's formula for reverberation time.   **6M**
   b A hall of volume 2 m3 with an absorption of 4 Sabine. Calculate its reverberation   **6M**
    time.

OR

6 a Write any four methods for the detection of ultrasonics and Explain the properties   **8M**
    of ultrasonics
   b A piezo electric crystal has a thickness of 0.002 m. If the velocity of sound wave in   **4M**
    crystal is 5750 m/s, calculate the fundamental frequency of the crystal.

UNIT-IV

7 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.

OR

8 a Distinguish between damped and forced oscillations with suitable examples.   **8M**
    Explain the phenomenon of resonance and write the applications of resonance
    in various fields.

   b The frequency of a tuning fork is 300Hz. If its quality factor Q is 5x104, find the   **4M**
    time After which its energy becomes (1/10) of its initial value.

UNIT-V

9   a Explain the quantum confinement effect and how it affects the optical and magnetic   6M
       properties of nanomaterials.

    b Discuss in detail the construction and working of SEM.   6M

OR

10 a Describe the sol-gel method of synthesis of nanomaterials.   6M

    b Explain how the physical and optical properties changes when a material is brought   6M
       down to Nano scale.

*** END ***