PVP 20

Code: 20BS1104

I B.Tech - I Semester – Regular Examinations – JULY 2021

APPLIED PHYSICS
(CIVIL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

UNIT – I

1. a) Prove that F= - grad V. 6 M
   b) What are damped harmonic oscillations? Derive equation for damped harmonic oscillations. 8 M

OR

2. a) Distinguish between conservative and non-conservative forces. 7 M
   b) What is simple harmonic motion? Derive the equation of SHM. 7 M

UNIT – II

3. a) Write a short note on Poisson's ratio. 6 M
   b) Discuss the elastic behavior of the material using stress-strain diagram. 8 M

OR

4. a) Write the differences between elasticity and plasticity. 6 M
   b) Discuss the different factors affecting elasticity of a material. 8 M

UNIT-III

5. a) Examine the heat conduction mechanism in solids. 6 M
   b) With neat sketch, explain the Forbes method to determine the coefficient of thermal conductivity of the good conducting materials. 8 M

OR

6. a) Explain the fundamental heat transfer mechanisms. 6 M
   b) With neat sketch, explain Lee's disc method to determine the coefficient of thermal conductivity of the bad conducting materials. 8 M

UNIT – IV

7. a) State and derive Weber-Fechner law. 6 M
   b) Write the basic requirement for acoustically good hall. 8 M

OR

8. a) What is absorption coefficient? Obtain the equation to estimate absorption coefficient of a material in a room. 8 M
   b) Discover the total absorbing power of all the surfaces in the hall assume that the hall with dimensions 16 x 10 x 10 cubic meter is found to have reverberation time 4 seconds. 6 M

UNIT – V

9. a) With a neat sketch, describe the principle and working mechanism of temperature sensor. 8 M

   b) Define Sensor. Write any four important applications of sensors. 6 M

OR

10. a) Describe the construction and working of fiber optic sensor of stress and force. 8 M

    b) Explain the construction and working of Displacement sensor. 6 M