Code: 19A56102T

R19

B.Tech I Year I Semester (R19) Regular Examinations January 2020

ENGINEERING PHYSICS

(Civil Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What are the importance of rotational frames?
(b) Explain the basic principle of Foucault's pendulum.
(c) What is reverberation of sound? How it is rectified in designing of an auditorium?
(d) Why ultrasonic waves are used in non destructive testing of materials?
(e) Explain the polarization of a dielectric in the presence of electric field.
(f) What are the outcomes of the study of hysteresis process of ferromagnetic materials?
(g) Identify the important characteristics of laser.
(h) Identify the reason for the focussing effect of propagating light signals in a graded index optical fiber.
(i) What is the principle involved in the fiber optic pressure sensor?
(j) Mention the applications of bimetallic strip sensor.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Describe Newton's laws in inertial and linear accelerating non inertial frame of references.

OR

3 (a) Explain the importance of conservative force with an example.
(b) Describe the concept of center of mass of a system having particles.

UNIT – II

4 (a) What is absorption coefficient? How do you find the absorption coefficient of the given material?
(b) Mention any three factors affecting the acoustics of buildings with suitable remedy.

OR

5 (a) Describe the production of ultrasonic waves using magnetostriction method.
(b) Explain A-scan in ultrasonic non-destructive testing method.

UNIT – III

6 (a) Explain the occurrence of electronic polarization in a dielectric.
(b) Describe the frequency dependence of polarization of a dielectric.

OR

7 (a) Distinguish between hard and soft magnetic materials.
(b) Identify the importance of the domain concept of ferromagnetism.

UNIT – IV

8 (a) Describe the construction and working principle of Nd-YAG laser with neat diagram.
(b) Mention the significant applications of laser.

OR

9 (a) Derive the expressions for acceptance angle and numerical aperture of an optical fiber.
(b) Find the numerical aperture of an optical fiber with the refractive index of core and cladding has 1.545 and 1.495 respectively.

UNIT – V

10 (a) Identify the principle involved in the fiber optic temperature sensor.
(b) Explain the working principle of Hall effect sensors.

OR

11 (a) Explain the working principle of piezoelectric sensor.
(b) Describe the principle of strain sensors.

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