R20 Regulation *Subject code:* 3B1AC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech I Semester Regular Examinations, July 2021

ENGINEERING PHYSICS

(Common to CE & ME)

Maximum Marks: 70 Date:16.07.2021 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

1 Define a wave.
2 Differentiate between the damped and undamped vibrations.
3 What do you mean by the terms (i) reflection and (b) transmission of a wave?
4 Define absorption coefficient of a material.
5 State Huygens' principle.
6 Why the rings are circular shape in Newton's rings experiment?
7 State Bragg's law.
8 What is resolving power of a grating?
9 What is meant by population inversion?
10 Define Numerical aperture.

Part-B

Answer All the following questions. (5X10M=50Marks)

11 a) Define simple harmonic motion. Also explain the terms time period, amplitude and phase of a Wave. [5]
b) Explain the working of mechanical harmonic oscillator.[5]

OR

12 a) Distinguish between forced and natural oscillations.[5]
b) Discuss about the energy decay in a damped harmonic oscillator. [5]

13 a) Derive the transverse wave equation on a string. [5]
b) Explain reflection and transmission of waves at a boundary. [5]

OR

14 a) Give an account of Standing waves [2]
b) Derive the Sabine's formula for reverberation of time of a Hall.[8]

15 a) Explain the principle, theory and working of Michelson interferometer.[10]

OR

16 a) Explain Young's double slit experiment.[5]
b) Write the difference between interference and diffraction. [5]

17 a) What do you mean by diffraction of light? [2]

b) Discuss the features of Fraunhofer diffraction pattern produced by a single slit.[8]

OR

18 Describe with suitable diagram the powder method for determination of crystal structure. [10]

19 a) Explain the construction and working of He-Ne laser.[5]

b) Write the properties of Laser. [5]

OR

20 a) Distinguish between step index and graded index fibers. [5]

b) Give applications of optical fibers. [5]