R17 Regulation *Subject Code:1B1AC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech. I Year I Semester Supplementary Examinations, April 2022

ENGINEERING PHYSICS

(Common to Civil Engineering & Mechanical Engineering)

Maximum Marks:70 Date: 05.05.2022 Duration: 3hours

Part-A

Answer all the following questions **10x2=20 Marks**

1. Explain different types of interference.
2. What is plane diffraction grating?
3. What is quarter wave plate explain?
4. Explain the terms pumping and population inversion in lasers?
5. What is the principle of optical fibre.
6. Write notes on fibre optic sensors.
7. Write a note on lattice parameters of a unit cell.
8. Calculate the packing fraction of BCC structure.
9. Describe point imperfection (a) vacancy, (b)Frenkel defects.
10. What is the Burger vector?

Part-B

Answer All the following questions **Marks: 5 x 10M = 50M**

11. Discuss the theory of Newton rings with relevant diagram. (10m)

OR

12. Explain experimental method of determination of wave length of spectral lines of a given source of light using plane transmission grating. (10m)

13. What is the Malu's law? Derive? (10m)

OR

14. Derive the relation between the Einstein coefficients. (10m)

15. Derive the equation for Acceptance angle and Numerical aperature. (10m)

OR

16. How many types of optcal fibre? Explain each of them. (10m)

17. Write short notes on BCC structure and simple cubic structure. (10m)

OR

18. Derive an expression for the inter-planar spacing in the case of orthogonal crystal. (10m)

19. Derive expression for Bragg's law of X-ray diffraction. Write down the applications of X-rays. (10m)

OR

20. (a) How many types of surface defect? Explain each of them. (5m)

(b) What are the differences between edge dislocation and screw dislocation. (5m)