R18 Regulation *Subject code:* 2B1AB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Year I Semester Examinations, December 2019

ENGINEERING PHYSICS

(Common to CE & ME)

Maximum Marks: 70 Date: 18.12.2019 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. Write how many co-ordinate systems are used to describe motion of particle?
2. Discuss the Transformation of a scalar under rotational transformation?
3. Define Quality factor of a damped oscillator?
4. Define Mechanical Impedance?
5. Write two differences between progressive waves & stationary waves?
6. Define Transverse wave and longitudinal wave?
7. Explain reflection and transmission of light?
8. Define critical angle of Refraction?
9. What are spontaneous and stimulated emissions?
10. Define acceptance angle, acceptance cone?

Part-B

Answer All the following questions. **(10M X 5=50Marks)**

11. Obtain the Newton's second law in polar co-ordinates? (10M)

OR

12. Discuss the Transformation of a vector under rotational transformation? (10M)

13. Explain the damped harmonic oscillator along with three conditions over damped, under damped and critical damped? (10M)

OR

14. Explain the LCR circuit and obtain the equation for resonance? (10M)

15. a) Discuss about transmission of sound and transmission loss. (5M)

b) Derive the Sabine's formula? (5M)

OR

16. Obtain the equation of a transverse wave along a stretched string clamped at both the ends? (10M)

17. a)What are Newton's rings derive the conditions for maxima and minima under reflected light? (5M)

b) Deduce the equation for radius of curvature? (5M)

OR

18. Explain the Michelson interferometer and mention the different types of fringes possible by the interferometer? (10M)

19. Explain the working and construction of He-Ne LASER? (10M)

OR

20. a) Explain the structure of optical fiber. Give any three applications. (5M)

b) Explain the SI and GI fibers along with their index profile and transmission. (5M)