R17 Regulation *Subject code:1B2AF*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Year II Semester Supplementary Examinations, October 2022

Engineering Physics-II

(Common to EEE, ECE, CSE & IT)

Maximum Marks: 70 Date:11.10.2022 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 which carries 10M.
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 Electromagnetic waves.
2 The energy of the particle is E. Write the equation for the wavelength associated with it.
3 What is the direct band gap and indirect band gap semi-conductors.
4 Define the rectifier.
5 Write down the polarization of dielectric materials
6 What is pyro electric effect and mention two applications.
7 Define Bohr magneton.
8 Explain the Meissner effect of superconductors with neat diagram.
9 Explain surface to volume ratio of nanomaterials.
10 What are different optical properties of nanomaterials.

Part-B

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

11 With neat diagram Justify the wave nature of particle using Davisson- Germer"s experiment. (10)

OR

12 Discuss about a particle in one dimensional potential box and show that their energies are quantized. (10)

13 With neat diagram, explain P-type semiconductors. Derive the equation for carrier concentration (10)

OR

14 With neat diagrams, analyze the energy diagrams for an unbiased, forward biased and reverse biased p-n junction diode. Summarize it's I-V Characteristics. (10)

15 With neat diagram explain the electronic polarization. Derive the equation for electronic polarizability. (10)

OR

16 Explain the ferroelectric materials in detail. Discus the temperature dependence structure of the Barium titanate. (10)

17 Explain the ferromagnetism on the basis of hysteresis curve. (10)

OR

18 Explain the type-I and type-II superconductors with neat diagrams. Mention two applications of each type. (10)

19 Explain the fabrication of nano materials with Physical Vapour Deposition technique. (10)

OR

20 With neat diagram, explain the Transmission Electron Microscope. (10)