

TEEGALA KRISHNA REDDY ENGINEERING COLLEGE**(UGC – AUTONOMOUS)****B TECH II Semester Examinations, September 2021****(Common to EEE, CSE & IT)****APPLIED PHYSICS****Answer any Five questions****All questions carry equal marks****Time : 3 Hours****Max. Marks : 75**

1. a) What is a black body? What are the salient features of black body radiation? Give Plank's hypothesis. (7M)
b) What is Compton effect? Derive an expression for Compton shift in the wavelength of a photon after scattering from an electron. (8M)
2. a) What is a Zener diode? Explain the operation of a Zener diode in the forward and Reverse bias condition. (7M)
b) State Hall effect. Derive an expression for Hall coefficient of a material. (8M)
3. a) Explain the construction and working of semiconductor diode laser. (7M)
b) Write brief notes on i) p-i-n Photodiode and ii) Avalanche Photodiode. (8M)
4. a) With the help of a suitable energy level diagram, explain the principle, construction and working of a He-Ne laser. (8M)
b) What is the principle of optical fiber? Describe various types of optical fibers. (7M)
5. a) Derive Maxwell equations in differential and integral forms. (8M)
b) Derive Clausius-Mosotti equation. (7M)
6. a) Describe Davisson and Germer's experiment and explain how it enabled the verification of wave nature of matter. (8M)
b) Illustrate the construction and operation principle of Bipolar Junction Transistor (BJT). (7M)
7. a) Explain with a neat sketch the basic principle, working and the applications of LED. (7M)
b) Describe the principle, construction and working of a Ruby laser. (8M)
8. a) Explain the working principle of optical fiber and derive the expression for acceptance Angle of an optical fiber. (7M)
b) Explain in detail the classification of diamagnetic, paramagnetic and ferromagnetic materials on the basis of permanent magnetic moment. (8M)