

GANPAT UNIVERSITY
B.Tech. (ME/MC/Civil/EE) Sem-II
Regular Examination April-June 2015
2EC101: Physics

Time: 3 Hours

Total Marks: 60

Instructions:

- (1) This Question paper has two sections. Attempt each section in separate answer book.
- (2) Figures on right indicate marks.
- (3) Be precise and to the point in answering the descriptive questions.

SECTION-I

- Q.1 (A)** List out types of Thermometer and Explain Resistance Thermometer in detail. **5**
- (B)** A motor car is fitted with two horns, which differ in frequency by 288 vibrations per second. If the car sounding the horns is moving at 30 m.p.h. towards a person, who is at rest, calculate the difference of frequencies of the notes heard by him. (Velocity of sound in air is 1120ft/s). **4**
- (C)** Explain concept of heat and work. **1**
- OR**
- Q.1 (A)** Find out the core diameter necessary for single mode operation at 850 μm . Fiber have core and cladding refractive indices of 1.48 and 1.47 respectively. Find N.A. and acceptance angle also. **3**
- (B)** Explain laws of Thermodynamics. **4**
- (C)** What are the requirements of the good Thermometer? **3**
- Q.2 (A)** What is Dispersion? Explain in detail with its types. **5**
- (B)** Explain classification of fiber with respect to Index profile in detail. **5**
- OR**
- Q.2 (A)** A policeman on duty at a crossing challenges a motor driver for crossing the speed limit of 100 kmph by detecting a change of 20 vibrations in the horn note of frequency 128 as the car passes by him. Is he correct? Velocity of sound is 350m/scc. **4**
- (B)** What is Thermal conductivity? Derive the equation for it. **4**
- (C)** Define: 1) Conical Fiber 2) Refractive Index **2**
- Q.3 (A)** What is Doppler effect? Explain various case of it when source and observer both are moving and medium is at rest. **4**
- (B)** What is Δ ? Derive N.A. in terms of it. **6**

SECTION II

- Q.4 (A) What do you mean by forward and reverse biasing to a P-N junction? Explain your answer with diagram. 6
(B) Explain avalanche effect with respect to diode. 4
- OR**
- Q.4 (A) What is P-N junction diode? Explain unbiased diode. 6
(B) What are paramagnetic and diamagnetic materials? Explain them in brief. 4
- Q.5 (A) What is ferromagnetism? Explain hysteresis loop observed in ferromagnetic materials. 6
(B) Distinguish between Type-I and Type-II superconductor in tabular form. 4
- OR**
- Q.5 (A) What is X-rays? Explain any one method of X-rays production. List out its properties. 6
(B) Explain Rutherford's scattering experiment in brief. 4
- Q.6 (A) Explain the terms: Magnetic induction, Magnetic dipole moment, Magnetization 6
(B) What is meant by doping? How does it affect a semiconductor? 2
(C) What is plasma? Explain in brief. 2

END OF PAPER
