Date: 22/12/2016. Exam No: _____

GANPAT UNIVERSITY

B. TECH SEM- I & II CBCS NEW (All branch)

REGULAR/REMEDIAL EXAMINATION–NOV-DEC-2016

2EC101 : Physics

MAX. TIME: 3 HRS **MAX. 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)	What is dispersion? What is its cause? Explain types of it in detail.	(4)
	(B)	List out types of fiber w.r.t. modes, also point out merits and demerits of each. What is the solution to overcome the limitations of both types? Explain in detail.	(6)
		OR	
Q.1	(A)	What is thermal conductivity? Derive the equation for it.	(4)
	(B)	Define thermometer. Briefly explain types of thermometer.	(6)
Q.2	(A)	What is Doppler's Effect? Derive the expression for change in frequency when source and observer both are in motion and medium at rest.	(5)
	(B)	Explain various ways for heat transmission.	(3)
	(C)	Calculate N.A., Acceptance angle and Critical angle if core and cladding refractive indices are 1.38 and 1.36 respectively.	(2)
		OR	
Q.2	(A)	A tuning fork of a frequency 440 approaches a wall with a velocity 4m/s. What will be the number of beats heard between the direct and reflected sounds, if the velocity of sound is 332m/s?	(4)
	(B)	List out advantages and disadvantages of fiber cable over a copper cable.	(4)
	(C)	Define 1) Absolute zero temperature. 2) Mean free path	(2)
Q.3	(A)	What is Numerical Aperture? Derive Numerical Aperture for fiber in terms of Δ.	(5)
	(B)	Which of the following statements is true for sound waves? Justify your answer with proper reason. 1) Sound waves are symmetric 2) Sound waves are asymmetric.	(3)
	(C)	What is the requirement of good thermometer?	(2)

SECTION: II

Q.4	(A)	With the help of energy band diagram, explain the concept of Energy hill for a p-n junction diode.	(5)
	(B)	Explain the Rutherford's alpha particle scattering experiment in detail.	(5)
		OR	
Q.4	(A)	What are Superconductors? Explain in detail along with their properties and a suitable example.	(5)
	(B)	Define the term Magnetic susceptibility. Also list out the important properties of paramagnetic and ferromagnetic materials.	(5)
Q.5	(A)	Explain the Hysteresis loop for a ferromagnetic material.	(5)
	(B)	For a p-n junction diode, explain the forward and reverse bias operation in detail.	(5)
		OR	
Q.5	(A)	Write short note on (i) Plasma (ii) Magnetic materials	(5)
	(B)	Differentiate between Extrinsic and Intrinsic types of semiconductor materials.	(5)
Q.6	(A)	What are X rays? Explain the Roentgen tube method for the generation of the X rays.	(5)
	(B)	Define the terms: Atom, Recombination, Hole, Insulator, Nanotechnology	(5)

----------**END OF PAPER**----------