

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE –SEMESTER 1&2(NEW SYLLABUS)EXAMINATION- WINTER 2018

Subject Code: 3110011

Date: 04-01-2019

Subject Name: Physics

Time: 10:30 am to 01:00 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

	Marks
Q.1 (a) Define: Ductility and Plasticity.	03
(b) Draw: Stress – Strain diagram with necessary notation. Explain: Elastic Limit and Upper Yield Point in detail.	04
(c) Explain Types of Elasticity In detail. Explain Factor affecting on Elasticity.	07
Q.2 (a) Define :Damped Harmonic Motion	03
(b) Explain Sound Absorption and Reverberation	04
(c) Illustrate various aspect associated with Acoustic of building.	07
OR	
(c) Derive the Expression for Depression of Cantilever.	07
Q.3 (a) Write down various advantage and disadvantage of NDT.	03
(b) Calculate the frequency to which a piezo electrical oscillator circuit should be tuned so that a piezo electrical crystal of 0.1cm thickness vibrates in its fundamental mode to generate ultrasonic waves. (Young`s modulus and density of the materials of crystal are 80GPa and 2654 Kg/m ³)	04
(c) Write a short note on Piezoelectric method for production of ultrasonic sound.	07
OR	
Q.3 (a) Explain Hook`s Law	03
(b) Calculate the fundamental frequency of vibration when A quartz crystal of 0.15cm thickness is vibrating at resonance. (Young`s Modulus of quartz is 7.9X10 ¹⁰ N/m ² and density is 2650 Kg/m ³)	04
(c) Explain: Non Destructive Testing.	07
Q.4 (a) Define: Penetration depth in the vicinity of Superconductivity.	03
(b) The Critical temperature of superconductor is 9.15K. At zero Kelvin the critical field is 0.196 Tesla. Calculate the field at 6K.	04
(c) Explain Josephson`s Junction and its applications.	07
OR	
Q.4 (a) Define Ultrasonic waves with necessary properties.	03
(b) Explain various applications of superconductor.	04
(c) Write short note Ruby Laser with necessary diagram.	07
Q.5 (a) Define: Population Inversion	03

- (b) Differentiate normal light and Laser light. **04**
(c) Explain various applications of LASER in Engineering and Medicine **07**

OR

- Q.5** (a) Define : Simulated Emission **03**
(b) Explain Kundt's tubes method for the detection of Ultrasonic Sound. **04**
(c) The volume of room is 800m^3 . The wall area of the room is 240m^2 , the floor area is 120m^2 and the ceiling area is 120m^2 . The average sound absorption coefficient, (a) for the walls is 0.03 (b) for the ceiling is 0.8 (c) the floor it is 0.06 .Calculate the average sound absorption coefficient and the reverberation time. **07**