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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER- I & II (NEW) EXAMINATION - WINTER 2019

Subject Code: 2110011 Date: 02/01/2020

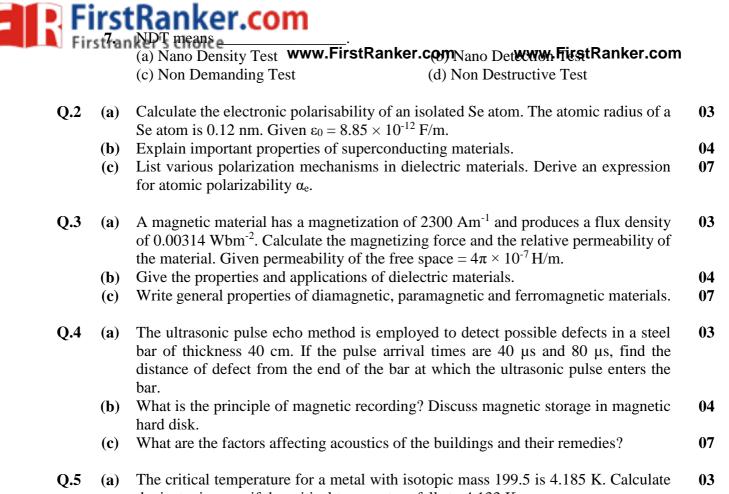
**Subject Name: Physics** 

Time: 10:30 AM TO 01:00 PM Total Marks: 70

**Instructions:** 

- 1. Question No. 1 is compulsory. Attempt any four out of remaining Six questions.
- 2. Make suitable assumptions wherever necessary.

	3.	Figures to the right indicate full marks.	•	
Q.1		Objective Question (MCQ)		Mar
	(a)	•		07
	1.	The polarization of a solid which contains N number of particles per unit volume is		
	equal to			
		(a) $P_e = N\alpha E$	(b) $P_e = 2N\alpha E$	
		(c) $P_e = N\alpha^2 E$	(d) $P_e = N\alpha^2 E^2$	
	2.	SQUID is an application of	( )	
		(a) Semiconducting materials	(b) Nano materials	
		(c) Superconducting materials	(d) Bio materials	
	3.	· · · · •	f pumping is used.	
		(a) inelastic atomic collision	(b) optical pumping	
		(c) direct electron excitation	(d) none of these	
	4.	The following are the structure of CNT		
		(a) Chiral	(b) Zigzag	
		(c) Armchair	(d) all of these	
	5.	Hysteresis loop for hard ferromagnetic substances is		
		(a) broad	(b) narrow	
		(c) cannot say	(d) none of these	
	6.	The high temperature stable phase of SMA		
		(a) Austenite	(b) Martensite	
		(c) Nitiosite	(d) None of these	
	7.	SONAR means	. ,	
		(a) Sound Negative and Ranging	(b) Sound Navigation and Radiation	
		(c) Sound Negative and Radiation	(d) Sound Navigation and Ranging	
	<b>(b)</b>			07
	1.	Which Of the following is Weber-Fechner	's Law?	
		(a) $L = K \log_{10} I$	(b) $I = K \log_{10} L$	
		(c) $L^2 = K \log_{10} I$	(d) $I^2 = K \log_{10}L$	
	2.	The current require to destroy the supercon		
		(a) $I_C = 4\pi r^2 H_C$	(b) $I_C = 2\pi r H_C$	
		(c) $I_C = 2\pi H_C$	(d) $I_C = 2\pi r H_0$	
	<b>3.</b>	Dielectric materials can also be termed as		
		(a) Conductors	(b) Semiconductors	
		(c) Insulators	(d) Superconductors	
	4.	Which one is not having permanent dipole	es in absence of magnetic field?	
		(a) Paramagnetic material	(b) Ferromagnetic material	
		(c) Ferrimagnetic material	(d) Diamagnetic material	
	<b>5.</b>	LASER light consists of		
		(a) Electron flow	(b) Cosmic rays	
		(c) UV rays	(d) Coherent photons	
	6.	is the process to synthes	ize Metallic Glass.	
		(a) ball milling	(b) CVD	
		(c) plasma arching	(d) melt spinning technique	



the isotopic mass if the critical temperature falls to 4.133 K.

Explain the classification of optical fibres based on refractive index profile. **(b)** 04

Describe the construction and working of Nd:YAG LASER with a suitable energy 07 level diagram.

An optical fibre has a numerical aperture of 0.20 and a cladding refractive index of **Q.6** 03 1.55. Determine the acceptance angle for the fibre in water which has a refractive index of 1.33.

Write short note on Lithium cell. 04 **(b)** 

(c) List out techniques used in synthesis of Nanomaterials. Discuss any two of them in 07 detail.

What should be the total absorption and average absorption coefficient in a hall of **Q.7** 03 volume 10000 m<sup>3</sup> and total surface are of 1400 m<sup>2</sup> if it is required to have reverberation time of 1.4 seconds.

Write note on electron confinement.

Explain temperature induced and stress induced transformation in SMA in details.

04

07

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