Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– 1st / 2nd EXAMINATION – SUMMER 2016

Subject Code: BSP001 **Date:02/06/2016**

Subject Name: Engineering Physics

Time:02:30 PM to 5:30 PM **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	Explain in details Work and Power in rotational motion.	**07**
	(b)	Classify and explain types of dielectric materials.	**07**
Q.2	**(a)**	Explain in details types of magnetic materials.	**07**
	(b)	(i) Define Torque and explain angular acceleration for rigid body.	**04**
		(ii) Expalin the term: Bohr Magneton, Dielectric Polarization, Damped oscillation	**03**
Q.3	**(a)**	Write down a short note on Nd:YAG laser with proper diagram.	**07**
	(b)	(i) Explain the factors affecting acoustics of buildings.	**04**
		(ii) Give the expansion of SONAR. Write two uses of it.	**03**
Q.4	**(a)**	Discuss in details types of optical fiber.	**07**
	(b)	(i) Explain numerical aperture and acceptance angle.	**04**
		(ii) A silica optical fiber has a core of relative index 1.55 and a cladding of refractive index 1.47. Determine the critical angle, numerical aperture and the acceptance angle for fiber.	**03**
Q.5	**(a)**	Explain with neat circuit the generation of ultrasonic waves using piezo-electric oscillator.	**07**
	(b)	(i) Distinguish between loudness and intensity.	**04**
		(ii) Calulate the intensity level of a plane just leaving the runway having sound intensity of about 1000 Wm^{-2}.	**03**
Q.6	**(a)**	Explain in details application of superconductors.	**07**
	(b)	(i) Compare Type –I and Type –II superconductors.	**04**
		(ii) Calculate the critical current for a superconducting wire of lead having diameter 1mm at 4.2 K. Critical temperature for lead is 7.18 K and H_0= 6.5 $\times 10^4$ A/m.	**03**
Q.7	**(a)**	List out the properties and application of CNTs.	**07**
	(b)	(i) Explain Sol-Gel method.	**04**
		(ii) Discuss advantages of nanomaterials.	**03**

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