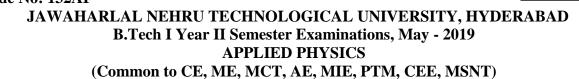
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Time: 3 hours

Note: This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

		(25 Marks)
1.a)	Define stress, strain and write their units.	[2]
b)	Define Poisson's ratio.	[3]
c)	What is the Sabine's formula? Explain	[2]
d)	What is acoustic quieting?	[3]
e)	What is Piezoelectric effect?	[2]
f)	What are the properties of ultrasonics?	[3]
g)	Explain dielectric constant & electrical susceptibility.	[2]
h)	Distinguish between Ferro-electricity and Piezoelectricity.	[3]
i)	What is Bohr magneton?	[2]
j)	Explain ferromagnetism.	[3]

PART-B

2.	What is the Torsional pendulum? Explain how it is used to deter rigidity modulus of a given wire.	mine the [10]	
	OR	[10]	
3.	Derive the relation between three modules of elasticity.	[10]	
4.	Explain various factors affecting architectural acoustics and their remedies. OR	[10]	
5.a)	What are the requisites for good acoustics?		
b)	Describe the method of measurement of sound absorption coefficient.	[4+6]	
6.	Explain how the ultrasonic waves produced with the help of piezoelectric method.[10] OR		
7.	Describe in detail applications of ultrasonic waves	[10]	

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(50 Marks)



Max. Marks: 75

- 8.a) Explain the electronic polarizability in atoms and obtain an expression for electronic polarizability in terms of the radius of the atom.
 - b) The radius of a gaseous atom is 0.062nm. Calculate the electronic polarizability of the gas and its relative permittivity. Given that the number of atoms of the gas is 2.7×10^{25} per m³. [8+2]

OR

- 9.a) Explain in detail the structure of $BaTiO_3$ and write its applications.
 - b) Derive an expression for ionic polarizability in an ionic solid. [5+5]
- 10.a) Explain the origin of magnetic moment and also explain classification of magnetic materials.
 - b) Describe Hysteresis behavior of ferromagnetic material. [5+5]

OR

- 11.a) Describe the properties of superconductors.
 - b) What are important applications of superconductors? Explain in detail. [4+6]

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