R16

Code No: 132AF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year II Semester Examinations, April - 2018

APPLIED PHYSICS

(Common to CE, ME, MCT, MMT, AE, MIE, PTM, CEE, MSNT)

Time: 3 hours **Max. Marks: 75**

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)	Write down Hooke's law.	[2]
b)	Define rigidity modulus and also mention units.	[3]
c)	Write down the Sabine's formulae	[2]
d)	What are the limitations of Sabine's formula?	[3]
e)	What are ultrasonic waves?	[2]
f)	Write the applications of ultrasonic waves.	[3]
g)	Define polarizability and susceptibility.	[2]
h)	Write short notes on piezoelectricity.	[3]
i)	What is superconductivity?	[2]
j)	Explain the origin of magnetization.	[3]

PART-B

(50 Marks)

2.a)	Derive the expression of work done for unit volume in deforming a body.	
b)	Explain the determination of rigidity modulus using torsional pendulam.	[5+5]
	OR	
3.a)	Discuss about elastic behavior of a material and factors affecting elasticity.	
b)	Explain about relation between three modulii of elasticity.	[5+5]
4.a)	State the acoustic requirements of a good auditorium. Explain how these requirements can be achieved.	
b)	Derive the Sabine's formula for reverberation time.	[5+5]
	OR	
5.a)	Explain how the absorption coefficient of an acoustic material can be determined.	
b)	State any five factors affecting the acoustics of the building and suggest their remedies.	[5+5]
6.a)	Explain the phenomenon of magnetostriction.	
b)	Determine the velocity of sound in a liquid with a neat sketch.	[5+5]
	OR	
7.a)	What is the piezoelectric effect? Explain the production of ultrasonic using piezoelectric crystal.	
b)	Explain the use of ultrasonic waves for non-destructive testing and in SONAR.	[5+5]

8.a) What are the important characteristics of ferroelectric materials?
b) Derive Clasusius-Mosotti relation for dielectrics. [5+5]

OR

9.a) Derive an expression for ionic polarizability.
b) Explain the phenomenon of ferroelectricity with particular reference to Barium Titanate. [5+5]

10.a) What is meant by domain? Explain the importance of hysteresis curve.
b) Explain the properties of Anti-ferro and ferri magnetic materials. [5+5]

OR

11.a) Explain the properties of superconductors and write types of superconductors.
b) Briefly discuss about Meissner Effect. [5+5]

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