Code No: 132AF **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year II Semester Examinations, August - 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)	What is shear modulus?	[2]
b)	Derive an expression for work done in stretching a wire.	[3]
c)	How to control reverberation in a hall?	[2]
d)	What is Echelon effect?	[3]
e)	What is inverse piezoelectric effect?	[2]
f)	What are the advantages of Non -Destructive Testing method?	[3]
g)	What is electronic polarization?	[2]
h)	What is an internal field in dielectrics? Explain.	[3]
i)	Explain Meissner effect.	[2]
j)	Distinguish soft and hard magnetic materials.	[3]

PART-B

(50 Marks)

2. State Hooke's law of elasticity. Draw stress - strain diagram and discuss the behavior of the ductile material under loading. [10]

OR

3. Describe in detail factors affecting the elasticity of a materials [10]

4.a) Describe the method of measurement of sound absorption coefficient.
b) Explain the Sabine formula of reverberation time [6+4]

OR

5. What are the basic requirements of acoustically good hall? [10]

6. Explain the construction and production of ultrasonic waves using Magnetostriction method [10]

OR

7. How ultrasonic waves are used in Non- destructive testing for materials. [10]

8. What is Orientational polarization? Derive an expression for Electronic Polarizability of dielectric materials? [10]

OR

9.a) Derive an expression for Clausius - Mossotti relation

b) Write a short note on piezoelectricity [6+4]

10.a) Explain in detail the classification of magnetic materials.

b) The magnetic susceptibility of Aluminium is 2.3×10^{-5}. Find its permeability and relative permeability. [8+2]

OR

11.a) Explain in detail the type – I and type – II superconductors.

b) A superconducting tin has a critical temperature of 3.7K at zero magnetic field and a critical field of 0.0306 Tesla at OK. Find the critical field at 2K. [8+2]

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