

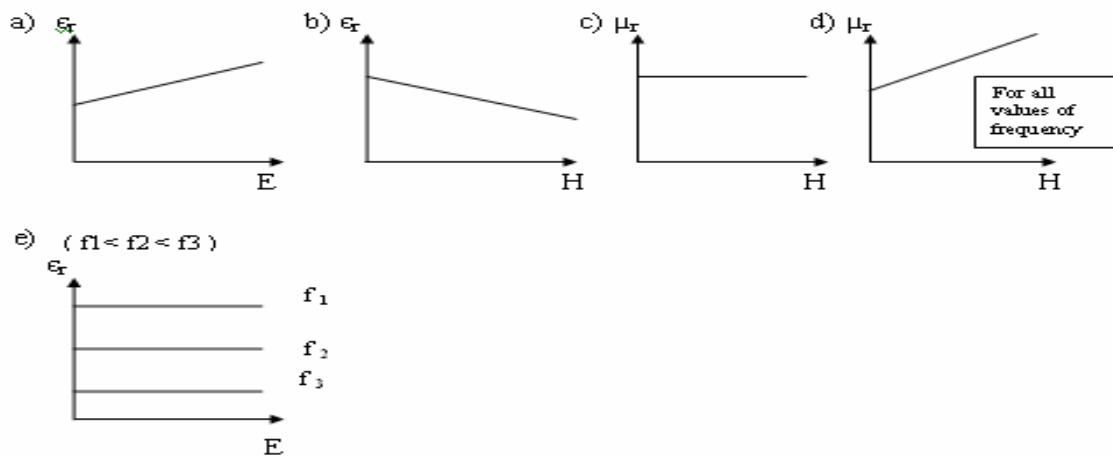


**Arab Academy for Science & Technology
and Maritime Transport – Cairo Branch
College of Engineering & technology
Electronics & Communication Engineering Department**



**EC311 – Electronic Materials
Problem Set No.2: Introduction to Electronic Materials
Duration: Week# 2**

P1) What is the type of material that has the relation between the constitutive parameter and the applied field as given in each figure below?



P2) For the following tables, what is the type of the measured material?

a)

conductivity	f1= 1 Mhz	f2= 2 Mhz	position
σ_1	4.5×10^5	5×10^5	x1, y1, z1
σ_2	4.5×10^5	5×10^5	x2, y2, z2
σ_3	4.5×10^5	5×10^5	x3, y3, z3
σ_4	4.5×10^5	5×10^5	x4, y4, z4

b)

conductivity	Position	frequency	Output
σ_1	x1, y1, z1	5×10^5	6×10^{15}
σ_2	x2, y2, z2	6×10^5	7×10^{15}
σ_3	x3, y3, z3	7×10^5	8×10^{15}

P3) Put (T) for right statements and (X) for wrong ones. Correct the wrong ones:

- (a) The term homogeneous material means that the constitutive parameters depend on the direction of the applied field. ()
- (b) The material can not be used after passing through a destructive test. ()
- (c) The destructive test must be done on finished components of the material. ()
- (d) Measuring the I/V characteristics of a resistor is a destructive test. ()
- (e) The term dispersive material means that the constitutive parameters of the material change with frequency. ()