F.Y.B.SC. SEM – II (2014 Course) : WINTER - 2018

SUBJECT: PHYSICS: ELECTRICITY & MAGNETISM (P-22)

Day: Monday
Date: 15/10/2018

W-2018-0787

Time: 03.00 PM TO 05.00 PM
Max. Marks: 40

N.B:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.

Q.1 Attempt **ANY TWO** of the following: **(10)**

a) Explain L-C-R series resonance circuit with its expression.

b) Define dielectric constant K. Find the angle of refraction with in the medium of dielectric constant 1.72, when angle of incidence of electric field at a plane dielectric boundary is 30^0. Assume air outside the dielectric medium.

c) State Ampere's circuital law and obtain an expression for magnetic induction due to long straight wire carrying current I.

Q.2 Attempt **ANY TWO** of the following: **(10)**

a) Define magnetic susceptibility. Find the magnetic induction at the centre of coil having radius 20 cm, 15 turns and carrying current 3 Ampere.

$(Given : \mu o = 4\pi \times 10^{-7}\ wb\, A^{-1}\, m^{-1})$.

b) State and prove maximum power transfer theorem.

c) Explain rise in current for R-C series circuit.

Q.3 Attempt **ANY TWO** of the following: **(10)**

a) Write a note on three phase power supply.

b) Write a note on $\vec{E}, \vec{D}, \vec{P}$ vectors.

c) Write a note on magnetization matter.

Q.4 Attempt **ANY FIVE** of the following: **(10)**

a) What is thermistor? State its types.

b) Define polar and non polar molecule.

c) What is capacitor? State any one application of it.

d) Define electric power. State its unit.

e) State any two methods for high DC Voltage generation.

f) State resistivity and conductivity of the substance.

g) Calculate impedance for the circuit having resistance and reactance, each equal to 100 Ω .

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