# MODEL QUESTION PAPER

**BF4**

## I Semester B.TECH Examination, August 2011
## ELECTRICAL TECHNOLOGY

Time: 3 Hours                                                                        Max. Marks: 75

### GROUP A : Answer any three questions.

Q.1 Explain the electrical charge and electrical current, Define their SI units.

Q.2 The impedance of a parallel R-L circuit is lot J5-2. It is fed from A 230v, 50Hz supply find current, Y, G, and B, 2.

Q.3 Find an expression for current in R-L-C series circuit. Draw the phasor diagram.

Q.4 A series AC circuit connected to 230V, 50Hz mains consists of a non-inductive resistance of $100\Omega$ and inductance of 100mH and a capacitance of $20\mu$F.Calculate, i) impedance ii) current iii) power factor iv) power.

Q.5 Define potential difference, power, magnetic field intensity, Time period, amplitude with their units.

### GROUP B : Answer any three questions.

Q.6 Distinguish between primary and secondary cells. Give examples.

Q.7 Explain Biot-savart law. Also explain the terms, magnetic field, magnetic fum, magnetic field intensity, magnetic flex density.

Q.8 Explain the concept of short circuit and open circuit.

Q.9 State & explain
(a) Gauss's law
(b) Ampere's rule
(c) Coulomb's law?

Q.10 Differentiate between statically and dynamically induced emf, how can the direction of this induced emf be found?

### GROUP C : All Questions are Compulsory.

### Q.11 Fill in the blanks

(i) The magnetic lines of farce is terminated an _____.
(ii) _____ may be generated by rotating a coil in a magnetic field.
(iii) Apparent power is equal to the product of _____ and _____.
(iv) Real power is equal to _____
(v) Telsa is a unit of _____.

### Q.12 Multiple choice question.

(i) Permittivity of free space is _____.

(a) $1.254 \times 10^{-10}$ farad      (b) $8.854 \times 10^{-12}$ farad/meter

(c) $0.005 \times 10^{-9}$ f/m      (d) None of these

(ii)    Unit of current is _____.

(a) Volt              (b) Watt

(c) Ampere        (d) Joule

(iii)   The direction of Electro-magnetically induced emf is determined by _____

(a) Fleming's right hand rule   (b) Lenz's rule

(c) Right hand thumb rule      (d) Both a & b

(iv)   Energy stored in capacitor _____.

(a)   $\frac{1}{2} CV^2$            (b)   $\frac{1}{2} I^2 R$

(c)   $\frac{1}{2} LI^2$             (d)   $\frac{1}{2} LV^2$

(v)    The opposition offered by a substance to the flow of electric current is called _____.

(a) Impedance          (b) Resistance

(c) Conductance        (d) Admittance

## Q.13 True or false

(i)     A resistor is an electrical component which can conduct current in both directions.

(ii)    Electrostatic field is established when a current flows through the inductor.

(iii)   Magnetic lines of farce always form a closed loop.

(iv)   The unit of resistivity is ohm-meter.

(v)    According to ohm law I=RV.

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