

**Basic Electrical & Electronics Engineering**  
**(EE-101, May-2006)**

**Note:** Section A is compulsory. Attempt any five questions from section B & C taking at least two questions from each part.

**Section-A**

1. a) The length of a conductor is doubled and its area of cross section is also doubled, then the resistance will
  - (i) Increase four times
  - (ii) Remains unchanged
  - (iii) Decrease to four times
  - (iv) Change at random
- b) Give reasons why are all equipments connected to parallel to the supply?
- c) What is the theory of shunt?
- d) What will be the current passing through the ring shaped air cored coil when number of turns is 800 and ampere turns are 3200?
- e) Why are dc series motors never started at no load?
- f) Energy meter is (i) an indicating instrument, (ii) an integrating instrument, (iii) a recording instrument, (iv) an absolute instrument.
- g) On what principles do the variable inductance types of transducers work?
- h) For a transistor, if  $I_E=1$  m A and  $\alpha = 0.98$ , determine the value of  $I_B$ ?
- i) Why an inductor cannot be fabricated on an IC?
- j) Give the truth table for J-K flip flop.

**Section-B**

2. (a) State ohm's law
- (b) What is the effect of temperature on resistivity?
- (c) A motor winding has a resistance of  $80\Omega$  at the room temperature of  $20^\circ\text{C}$  before switching ON to a 230 V. After 4 hours run the winding resistance is  $100\Omega$ . Find the temperature rise if the material resistance temperature coefficient is  $1/234.5^\circ\text{C}$ ?
3. Derive the necessary equations for converting a delta network into an equivalent star network.
4. Explain the principle and working of a DC generator.
5. (a) Compare the moving iron and moving coil meters.
- (b) Explain, how will you extend the range of an ammeter?

**Section-C**

6. (a) With the help of a neat diagram explain the principle and operation of a linear variable differential transducer.
- (b) List out the advantages of LVDT's.
7. (a) Explain FET as an amplifier.
- (b) What is the difference between MOSFET and FET?
8. Give the PIN diagram and its description for ICs 74XX series.
9. (a) Explain the working of R.S. flip flop.
- (b) Compare R-S flip flop with D flip flop.