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 α = 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 80Ω at the room temperature of 20°C before switching ON to a 230 V. After 4 hours run the winding resistance is 100 Ω. Find the temperature rise if the material resistance temperature coefficient is 1/234.5°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.