Total No. of printed pages = 3

**EI-304/EEE/3rd Sem/M/2013**

# ELEMENTS OF ELECTRICAL ENGINEERING

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. Define and explain : 6+8=14

   (a) Work, Energy and Power.

   (b) A motor takes 190 ampere at 400V and gives 80 h.p. What is its efficiency and find the unit consumed per hour.

2. Define conductors and insulators. Name and write the properties of at least five conductors and five insulators used in electrical industry. 14

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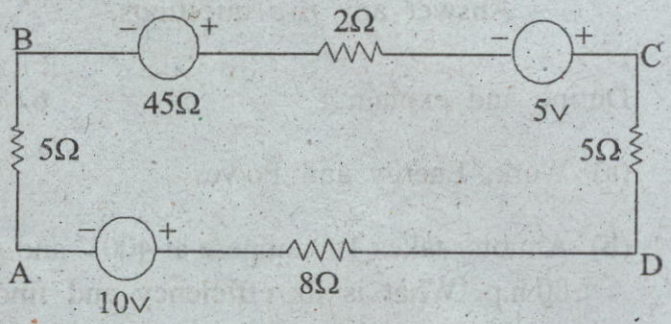
3. (a) Draw lead acid battery and describe its different parts. 2+3=5

(b) What are the different types of d.c generator ? Draw the symbolic diagram of each type. 2+2=4

(c) Derive the e.m.f equation of a d.c. generator. 5

4. (a) State and explain Kirchoff's law. 6

(b) In the circuit shown below, determine the voltage rise from A to C and power absorbed by the portion AD. 8




5. (a) Define : maximum value, RMS value, form factor and average value. 8

(b) An e.m.f is given by 170 sin 314t.

Determine : $1\frac{1}{2} \times 4 = 6$

(i) Its maximum value

(ii) R.M.S value

(iii) Frequency

(iv) Time period.

6. (a) Derive the e.m.f equation of motor. 5

(b) Give the reason why rotor of an induction motor is set into rotation. 6

(c) What is slip in induction motor ? 3

7. Write short notes on any *two* : $7 \times 2 = 14$

(a) Auto transformer

(b) Back e.m.f

(c) R-L-C series circuit.