PVP 14

Code: EE1T6

I B.Tech - I Semester – Regular Examinations - January 2015

INTRODUCTION TO ELECTRICAL ENGINEERING

(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11 x 2 = 22 M

1. a) Explain the effect of temperature on resistance and its temperature co-efficient.
   b) Define electric current and potential difference.
   c) Derive the expression for horse power from its basic principles.
   d) Explain the heating effect of electric current.
   e) State and explain Coulomb's Law.
   f) Three capacitors of 2F, 5F and 4.5F are connected in series. What is its C_{eq}?
   g) Explain Faraday's Laws of Electromagnetic Induction.
   h) State and Explain Mutual Inductance.
   i) Explain absolute and relative permeability.
   j) What kind of chemical changes occur while charging & discharging batteries?
   k) Explain dynamically induced EMF.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks. 3 x 16 = 48 M

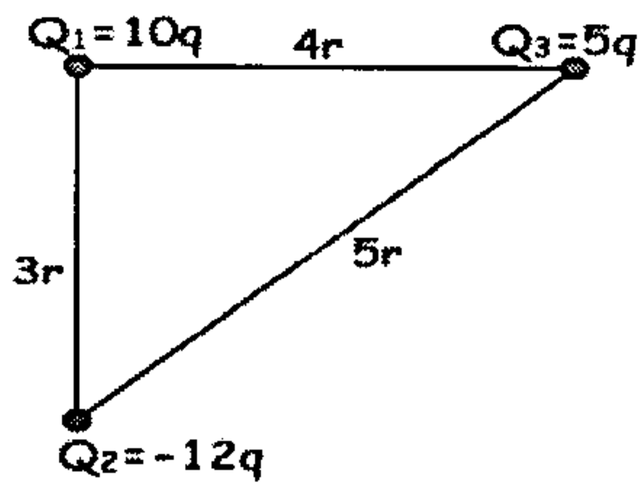
2. a) State and explain Kirchhoff's Laws. 8 M

   b) A combinations of three parallel resistors of 3ohms each is connected in series with another combination of four parallel resistors of 5ohms each. Obtain its equivalent resistance. 8 M

3. a) Define Mechanical Energy, Electrical Energy, Electrical Power and obtain the relation between thermal, mechanical and electrical units. 8 M

   b) Explain thermal energy and obtain the expression for power and specify the units. 8 M

4. a) Find electric potential energy produced by Q_1, Q_2 and Q_3 in terms of $k.q^2/r$. 8 M



   b) Explain the working principle of a capacitor and obtain the expression for capacitance of a plate capacitor with uniform medium. 8 M

5. a) Define magnetic field and magnetic flux density and explain B-H curves. 8 M

b) Derive the expression for coefficient of coupling and expression for energy stored in a magnetic field. 8 M

6. a) Explain the construction of a Lead Acid Cell along with its characteristics. 8 M

b) Explain the production of single phase AC supply and compare it with three phase AC supply. 8 M