41054 Seat No._____

Second Year B. Sc. (Fire) Examination

April / May – 2003

Applied Electrical

Time : Hours] [Total Marks :

Instructions : (1) All questions are **compulsory,** each of **14** marks.

(2) Figures to the **right** indicate **full** marks of the questions.

(3) Non-programmable scientific calculators are permitted.

1 (a) Derive an equation of A-C series skt for **7**

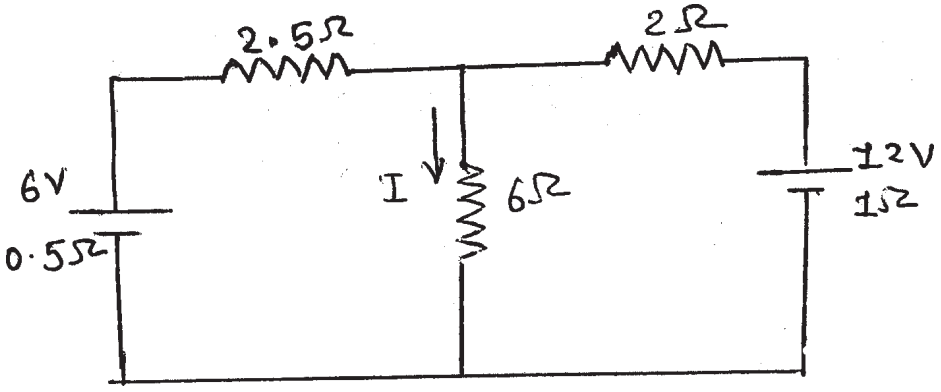
(i) Current

(ii) Power factor

(iii) Power

and also draw vector diagram for it.

(b) Find current through $6\,\Omega$ resistor by superposition **7** theorem.



OR

1 (a) State and explain KCL and KVL. **3**

(b) Explain Faraday's Laws of electromagnetic Induction. **3**

(c) Explain Law of Resistance. **3**

(d) Define following : **5**

(1) Power factor

(2) R.M. S. value

(3) Dielectric strength

(4) Potential Difference

(5) Frequency.

2 (a) Explain types of circuit breaker in brief. **7**

(b) Explain types of earthing in details. **7**

OR

2 (a) Explain construction and working principle of PMMC meter. **7**

(b) Explain importance of fuse and also explain types of fuse in detail. **7**

3 (a) Explain construction and working principle of transformer. Also give the types of cooling used for transformer. **7**

(b) Give answers of following :

(1) What happen if D.C. supply is given to transformer ? **1**

(2) Which types of losses occur in transformer ? **2**

(3) An ideal 50 Hz, core type transformer has 100 primary winding turns and 200 secondary winding turns. The primary rated voltage is 220 V, if maximum permissible flux density is 1.2 wb/m^2 : **4**

(i) What should be the area of cross section iron core ?

(ii) Find secondary voltage.

OR

3 (a) Derive e.m.f. equation of transformer. **7**

(b) Explain the method for finding out transformer losses. **3**

(c) Explain Buchhol 2 relay in detail. **2**

(d) Find primary and secondary current in 1 kVA, 50 Hz, in 230/115 V transformer if primary winding is supplied at 230 V A.C. supply. **2**

4 (a) Answer the following questions : **6**

(1) Explain power distribution grid

(2) State advantages of HV transmission system.

(b) Write short note : **8**

(1) Thermal power station

(2) House wiring.

OR

4 (a) Answer the following questions : **6**

(1) Explain equipments used in Hydropower station.

(2) Explain D.C. generator with its working principle, construction.

(b) Write short note : **8**

(1) Types of distribution systems

(2) Substation, equipments installed in it.

5 (a) What is static electricity ? How is it result into fire ? What should be done to reduce chances of fire ? **7**

(b) Explain mechanism of lighting and protection used for it. **7**

OR

5 (a) Explain electric traction with its types. **7**

(b) Which equipments are used in electric traction ? Explain in brief. **7**