SET - I

MODEL QUESTION PAPER
06 ELE 15/25 - BASIC ELECTRICAL ENGINEERING
(Answer any 5 questions by selecting at least two questions from each part.)

PART – A

1a)	State and explain Kirchhoff's laws.	6
b)	Prove the relation between the self and mutual inductance	6
c)	Problem on D.C. circuit/magnetic circuit.	8
2a)	Define the RMS and AVERAGE value of a sinusoidal emf wave and obtain their expressions.	8
b)	Define i) real power, ii) reactive power and iii) apparent power as applied single Phase a.c circuits.	6
c)	Problem on single phase a.c. circuit.	6
3a)	List out the advantages of three phase system compared to single phase systems.	4
b)	Show that two watt meters are sufficient to measure total power in three phase Balanced circuit .	8
c)	Problem on three phase circuits	8
4a)	Explain with a neat sketch the working of dynamometer type wattmeter.	6
b)	With relevant circuit explain how a lamp can be controlled from three different points and where it is preferred.	6
c)	Explain the necessity of Earthing and with a neat sketch any one method of Earthing	8

PART - B

5a)	Explain with a neat sketch the constructional features of a D.C. machine and mention the functions of each part.	8
b)	Explain the principle of the production of torque in D.C. motors.	6
c)	Problem on D.C.Motors or Generators.	6
6a)	Explain the principle of operation of a single phase transformer.	4
b)	With relevant diagrams distinguish between the core type and shell type transformers	8
c)	Problem on transformer.	8
7a)	Mention the different types of synchronous generators and explain the construction of each type with relevant diagram.	8
b)	Derive the EMF equation of an alternator.	6
c)	Problem on alternator.	6
8a)	Explain why Induction motors never run at synchronous speed.	6
b)	Compare the squirrel cage type with the slip ring Induction motor and mention their applications.	8
c)	Problem on Induction Motor.	6

SET - II

MODEL QUESTION PAPER
06 ELE 15/25 - BASIC ELECTRICAL ENGINEERING
(Answer any 5 questions by selecting at least two questions from each part.)

PART – A

1a) Show that the equivalent resistance of two resistors connected in parallel is the ratio of the product of those two resistances divided by the sum of those two resistance values. 4
b) Explain the Fleming's rules as applied to the production of EMF and Torque. 8
c) Problem on electro – magnetism / D.C. circuits. 8

2a) With usual notations show that the average power consumed by a pure capacitor is zero. 6
b) With reference to an a.c circuit, differentiate between
i) Phase and Phase difference, ii) Reactance and Impedance,
iii) lag and lead power factors. 6
c) Problem on single phase a.c circuit. 8

3a) Obtain the relationship between the line and phase quantities of balanced Star or Delta loads. 8
b) In the course of measurement of power in three phase circuits the watt meter readings are related as follows. Find the power factor when,
i) W1 = W2, ii) W1 = 2W2, iii) W1 = 0. 6
c) Problem on three phase circuit. 6

4a) With a neat sketch explain the working of a single phase energy meter 8
b) Write a brief note on fuse. 4
c) Explain what is Earthing and with a neat sketch explain the plate Earthing 8

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PART – B

5a) With usual notation derive an expression for the induced E.M.F of a D.C. machine 6
b) Draw the typical Speed - load characteristics of a D.C. series motor and comment on its shape. Mention its practical applications. 6
c) Problem on D.C. Generator or D.C. Motor. 8

6a) With usual notations derive an expression for the induced EMF in a single phase Transformer and define the term transformation ratio. 8
b) List out the various losses in a transformer and explain how they vary with load and how they are minimized. 6
c) Problem on transformer. 6

7a) Explain the Salient and Non Salient pole generators and where they are preferred. 6
***b) List out the various losses in an ac generator and how its efficiency is estimated. 6**
c) Problem on alternator. 8

8a) Define the term 'slip' in an Induction motor and explain its importance. 6
b) Explain the necessity of a starter for an Induction motor. 4
c) Problem on Induction motor. 10