

22418

12526

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Answer each next main Question on a new page.
- (3) Illustrate your answers with neat sketches wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Assume suitable data, if necessary.
- (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following :** **10**
- a) Define an electric motor.
- b) State Fleming's right hand rule.
- c) State the function of pole and field winding used in DC motor.
- d) Define transformer.
- e) List the methods of cooling.
- f) State two advantages of Amorphous transformer.
- g) State two features of pulse transformer.

P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) State any four parts of induction motor also write the function of that parts.
 - b) What is back emf ? Explain the significance of back emf for proper working of DC Motor.
 - c) Derive the emf equation of DC generator.
 - d) Justify the need of starter for DC motors.
- 3. Attempt any THREE of the following : 12**
- a) Draw a neat labeled sketch of three point starter.
 - b) Give detail classification of transformer.
 - c) Derive emf equation of single phase transformer.
 - d) Compare shell type and core type transformer.
- 4. Attempt any THREE of the following : 12**
- a) Define voltage regulation and efficiency of transformer.
 - b) A 3 KVA 220/110 V transformer has 600 turns on its primary. Find its transformation ratio and secondary turns.
 - c) A 5 KVA 250/500 V 50 Hz single phase transformer gave following result
O.C. test 250 V, 0.75 A, 60 W (LV side)
S.C. test 9 V, 6 A, 21.6 W (HV side). Calculate equivalent circuit parameters.
 - d) State advantages of 3 phase transformer over a bank of 3 single phase transformers.
 - e) Compare single phase autotransformer and two winding transformer.

5. Attempt any TWO of the following :**12**

- a) A 600 KVA, distribution transformer have copper and iron losses of 5.4 kW and 3.4 kW respectively on full load. The transformer is loaded as shown below. Calculate the all day efficiency.

Loading (kW)	Power factor (lag)	No. of hours
500	0.9	08
300	0.8	10
100	0.75	03
No Load	–	03

- b) List any six parts of three phase transformer and state function of each part.
- c) With neat sketch explain the construction and working of current transformer.

6. Attempt any TWO of the following :**12**

- a) State the need of parallel operation. Also write the conditions for parallel operation. And state advantages of parallel operation.
- b) With neat sketch explain working of single phase welding transformer and also list special features of welding transformer.
- c) Compare distribution transformer and power transformer on any six points.
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