

17637

15116

3 Hours / 100 Marks

Seat No.

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

Marks

1. a) Attempt any THREE of the following: 12
- (i) State any four factors on which severity of shock depends.
 - (ii) State any four objectives of preventive maintenance of electrical equipments.
 - (iii) State the factors on which life of Insulation depends.
 - (iv) State the permissible limits for variation of:
 - 1) Voltage
 - 2) Current
 - 3) Speed
 - 4) Frequency

P.T.O.

- b) **Attempt any ONE of the following:** **6**
- (i) With the help of neat circuit diagram explain back to back test on transformer to determine efficiency and regulation.
 - (ii) With the help of neat diagram explain phasing out test to be carried out on transformer.
- 2. Attempt any TWO of the following:** **16**
- a) (i) State any six activities that are to be carried out for the person who received electrical shock.
 - (ii) State different methods of artificial respiration and explain any one of them.
 - b) Give the maintenance schedule of distribution transformer as per IS 10028 (Part III) - 1981.
 - c) State four possible causes for each of the following troubles of a 3 phase Induction motor.
 - (i) Motor switch 'ON' but does not start.
 - (ii) Motor overheat
 - (iii) Motor runs slow
 - (iv) Motor stalls
- 3. Attempt any FOUR of the following:** **16**
- a) List any four internal and external causes for the abnormal operation of electrical equipments.
 - b) State the roles of Bureau of Indian standards in testing of Electrical equipment.
 - c) Compare direct, indirect and regenerative type of testing (any four points).
 - d) State the classification of insulating materials as per IS 1271-1985.
 - e) State different methods for measurement of insulation resistance and explain any one of them.

4. a) **Attempt any THREE of the following:** **12**
- (i) What precautions should be taken to avoid fire due to electrical reasons?
 - (ii) List out the tests to be carried out on transformer as per IS 2026 and state the objective of heat run on test on transformer.
 - (iii) What are the factors to be considered in designing the machine foundation?
 - (iv) State the various requirements of installation of rotating machines.
- b) **Attempt any ONE of the following:** **6**
- (i) Why filtering of transformer oil is required? Explain with neat sketch any one method of filtering transformer oil.
 - (ii) Draw the circuit diagram to perform the reduced voltage run up test on 3 phase induction motor and describe the objective of test.
5. **Attempt any TWO of the following:** **16**
- a) What do you mean by revarnishing of insulation? When it is required? Explain with neat sketch, vacuum impregnation method of varnishing.
 - b) A 415 V, 40 h.p. (29.84 kW), 50 Hz delta connected motor gave the following test data.
No load test : 415 V, 21 A, 1250 W
Locked rotor test : 100 V, 45 A, 2730 W
Construct the circle diagram and determine
 - (i) the line current and power factor for rated output.
 - (ii) maximum torqueAssume stator and rotor Cu losses equal at standstill.
 - c) What is the effect of misalignment on the performance of machine? Explain the procedure to be followed in aligned two shaft-in direct coupled drive.

6. Attempt any FOUR of the following:**16**

- a) What are the different routine tests and type test of single phase induction motor.
 - b) Describe the procedure of synchronous impedance method to find regulation of alternator.
 - c) List internal and external causes for failure of equipments.
 - d) List out the tools required for loading and unloading the heavy equipments. Also state the use.
 - e) State the meaning of earth resistance. State the permissible values of earth resistance in case of
 - (i) Power station
 - (ii) Substation
 - (iii) Domestic Installation
 - (iv) O.H. installation
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