

17637

11718

3 Hours / 100 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) 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

- (a) State the factors on which severity of shock depends.
- (b) State the importance of Electrical maintenance.
- (c) State the factors on which life of insulation depends.
- (d) State the use of filler gauge, spirit level, bearing Puller, Growler.

(B) Attempt any ONE of the following :

6

- (a) Draw the modified equivalent circuit of induction motor referred to stator side. Explain each components.
- (b) What do you mean by phasing out test ? When is it required ? Explain with neat sketch the method of carrying out this test.

2. Attempt any TWO of the following :**16**

- (a) What are the causes of fire due to electrical faults ? What precautions should be taken to avoid fire due to electrical reasons ?
- (b) Explain four factors affecting preventive maintenance schedule.
- (c) Prepare the troubleshooting chart of three phase induction motor. (any 4 faults)

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

- (a) State any four troubles in case of 3 phase transformer.
- (b) Draw and explain the circuit diagram to perform no load and S.C. tests on 3 ϕ induction motor.
- (c) State and explain the properties of transformer oil. (any four)
- (d) State the classification of insulating materials as per IS 1271-1985 with two example each.
- (e) What are the permissible limits for safe working of electrical machines ?

4. (A) Attempt any THREE of the following :**12**

- (a) A brake test for a dc motor the effective load on the brake pulley is 265 N. The effective diameter of the pulley is 650 mm. The speed is 750 rpm. The motor takes 37 Amps at 215 volts. Calculate the output power and the efficiency at this load.
- (b) List out the effect for mis-alignment of electrical machines.
- (c) Distinguish between installation earthing and system earthing.
- (d) What safety precautions are necessary when working with electrical installations ?

(B) Attempt any ONE of the following :**6**

- (a) Describe procedure of vacuum impregnation method with diagram.
- (b) A short circuit test was carried out to find impedance and load losses on a 1 kVA, 230/115 volts single phase transformer and following are the observing in primary side :

Consider eq. resist as 1.8Ω

I_{sc} short circulating	V_{sc} short circulating	W_{sc} power	Room temp.
4.35 Amp	9 Volts	35 watts	30 °C

Calculate

- (i) Impedance at 75 °C
- (ii) Impedance voltage at 75 °C
- (iii) Copper losses at 75 °C

5. Attempt any TWO of the following :**16**

- (a) Why is it necessary to check insulation resistance regularly and keep records ?
State the method of measurement of insulation resistance by megger.
- (b) What are the basic requirements of foundation for
- (i) Static equipments
- (ii) Rotating machines
- (c) A 3 phase 500 V, squirrel cage IM gave the following test results :
- No load test : 500 V, 4 A, 750 W
- Blocked rotor test : 100 V, 16 A, 800 W
- Draw the circle diagram and determine :
- (i) efficiency
- (ii) p.f. when motor is supplying 25 HP.

P.T.O.

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

- (a) List the devices and tools required for loading, unloading, lifting and carrying heavy equipment.
 - (b) State the necessity for electrical earthing & factors affecting earth resistance.
 - (c) Describe the objectives of reduced voltage running up test on 3 phase induction motor.
 - (d) List the Mechanical, Magnetic and electrical faults in the electrical machines.
 - (e) What are the different routine and types tests of transformer as per IS ?
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