**Con. 8243-13.**                                                    **LJ-11291**

(3 Hours)                                    [ **Total Marks : 100**

N. B. : (1) Question No. **1** is **compulsory**.

(2) Solve any **four** questions out of remaining **six** questions.

(3) **Each** question is for **20** marks.

(4) Assume suitable data if necessary.

1.  (a) Explain connection and phasor diagram of Dy11 transformer.                    **5**

    (b) Draw and explain torque-slip characteristic of three phase induction motor.    **5**

    (c) Explain the operating principle of three phase induction motor.                 **5**

    (d) Explain capacitor start single phase induction motor.                           **5**

2.  (a) An 18.65 KW, 4 pole, 50 Hz, 3 phase induction motor has triction and windage losses    **10**
        of 2.5 percentage of the output. The full load slip is 4 percentage. Find for full load
        (i) Rotor copper loss  (ii) Rotor input    (iii) Shaft torque.

    (b) Explain the construction & working of high torque motors.                       **10**

3.  (a) The tests on 3 phase star connected, 400 volts induction motor gave the following    **10**
        results.

| Test | Applied voltage | line current | Wattmeter Reading |
|------|-----------------|--------------|-------------------|
| N.L. | 400 V           | 20 Amp       | 1800 W            |
| B.R. | 50 V            | 60 Amp       | 3050 W            |

    The d.c. resistance of the stator winding per phase measured immediately after the
    blocked rotor test is 1.5 ohm.

    Calculate the elements of equivalent circuit of motor.

    (b) Explain loscillating neutral phenomenon in transformer.                         **10**

4.  (a) Explain different speed control methods of 3 phase induction motor.             **10**

    (b) Explain open delta connection of trnasformer with its connection diagram and also    **10**
        explain about KVA delivered by open delta connection of transformer.

5.  (a) Explain the conditions for the parallel operationof three phase transformer in detial.    **10**

    (b) Explain how rotating magnetic field of constant magnitude is produced in three phase    **10**
        induction motor.

**[ TURN OVER**

6.  (a)  A load of 1400 KVA at 0.866 power factor logging is supplied by two 3 phase   **10**
        transformers of 1000 KVA and 500 KVA capacity operating in parallel. The ratio of
        transformation is the same in both 6600 volts/400 volts delta-star connected
        transformer.
            If the equivalent secondary impedances are (0.001 + j 0.003) ohm and (0.0028
        + j 0.005) ohm respectively. Calculate one load and power tactor on each trnasformer.
    (b)  Explain Excitation phenomena in transformer.                                      **10**

7.  (a)  Explain logging and crawling in induction motor                                   **10**
    (b)  Explain double field revolving theory of single phase induction motor in detail.  **10**

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