Code No. : 3019-A

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) II Semester (Main) Examination, May/June 2011

ELECTRICAL TECHNOLOGY (PART – A)

Time : 1½ Hours] **[Max. Marks : 38**

Note : Answer **all** questions from Part – A. Answer any **three** questions from Part – B.

PART – A (Marks : 14)

1. Derive the power loss in resistive element. 2

2. Through a resistor of value 2 Ohms a current of i(t) = 2 sin 50t is passed. What is the voltage across its terminals ? 3

3. Define rms value of a.c. quantity. 2

4. Draw the phasor diagram of transformer on load at unity power factor. 2

5. Derive the torque equation of 3-ϕ induction motor. Draw the speed-torque characteristics. 3

6. Define the term "illumination". 2

PART – B (Marks : 24)

7. Derive the expression for power in 3-ϕ circuit. 8

8. A 1-phase, 250/500 V, transformer gave the following results : 8
   O.C. test : 250 V, 1 A, 80 W on L.V. side
   S.C. test : 20 V, 12 A, 100 W on L.V. side
   Calculate the parameters of equivalent circuit.

9. Explain with neat-sketches the principle of operation of a 3-phase induction motor. 8

10. (a) Derive the emf equation of a 1-ϕ transformer. 3
    (b) Derive the expression for voltage regulation of a 1-ϕ transformer. 5

11. (a) Explain with an example on street lighting calculations. 5
    (b) A 4-pole, 50 Hz induction motor runs with 4% slip at full-load. What will be the frequency of current induced in the rotor (i) at starting (ii) at full load ? 3

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