| BIEE-020 |

B.Tech. ELECTRICAL ENGINEERING

Term-End Examination

December, 2013

BIEE-020 : ELECTRICAL MACHINES AND ELECTRONICS

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt **any five** questions in all.*

1. (a) Enumerate various methods for 3 phase   10
        power measurement, and describe in detail
        two wattmeter method for 3-phase power
        measurement.

    (b) What are the disadvantage of having a low   4
        lagging power factor in a system ?

2. (a) What is an ideal transformer ? Draw the   6
        phasor diagram for an ideal transformer.

    (b) A 10 kVA, 400/200V single phase 50-Hz   8
        transformer has a maximum efficiency of
        92% at 80% of full load at unity power factor.
        Determine the efficiency at full load at
        0.8p.f. lagging.

3. (a) Explain the principle of operation of the   7
        3-phase induction motor with neat sketch.

    (b) What is a thyristor ? Draw the I-V   7
        characteristic of thyristor.

4. (a) Explain in detail the factors affecting selection of motor for industrial applications. **10**

   (b) Draw the slip-torque characteristics of 3-phase induction motor. **4**

5. Explain different methods to control the speed of a.c. and d.c. motors using power electronic devices. **14**

6. (a) List the advantages and disadvantages of three-phase transformer. **7**

   (b) Distinguish between the 'efficiency' and the 'regulation' of a transformer. Show how power factor affects both of them. **7**

7. Write short notes on the following : **2x7=14**

   (a) Application of motor for industrial use

   (b) Welding transformer

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