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**BIEE-008**

01239

# B.Tech. IN ELECTRICAL ENGINEERING (BTELVI)

## Term-End Examination

## December, 2011

## BIEE-008 : ELECTRO MECHANICAL ENERGY CONVERSION - I

*Time : 3 hours* *Maximum Marks : 70*

***Note :*** *Attempt **any five** questions. All questions carry **equal** marks.*

**1.** (a) Establish the relationship between magnetic field energy and co-energy, for a singly excited magnetic system. Also obtain the relation of magnetic energy stored. 7

(b) Define the term energy conversion. Also Discuss the advantages of analyzing energy conversion device by field energy concept. 7

**2.** (a) State the essential parts of any d.c. machine, and draw the constructional diagram of 2-pole elementary d.c. machine. 7

(b) Define pole, pitch front pitch, back pitch resultant pitch, average pitch and commutator pitch, for D.C machines. 7

3. (a) What do you understand by "armature reaction" ? How does it effect on main field flux. 7

(b) Explain the Hopkinson's test for testing of D.C. machines. 7

4. (a) A 6-pole machine has an armature with 90 slots and 8 conductors per slot and runs at 1000 rpm. The flux per pole is 0.05 wb. Determine the induced emf if winding is. 7
   (i) Lap connected
   (ii) Wave connected

(b) Describe in brief the three point starter in d.c. motors, 7

5. (a) Derive the emf and torque equation in dc machines. 7

(b) A 6600/400V single phase transformer has primary resistance and secondary resistance is 25Ω and 0.01Ω respectively. Calculate the total equivalent resistance referred to primary and secondary. 7

6. (a) Discuss in brief open and short circuit test of transformer. 7

(b) Explain the excitation phenomenon of three phase transformer by taking example of a star connected network. 7

7. Write short Notes on ***Any two*** of the following : **2x7=14**
   (a) Star and delta connections.
   (b) Methods of speed control of d.c.motors.
   (c) D.C. generators.