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BIEE-016

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

00655 **June, 2019**

BIEE-016 : ELECTRO-MECHANICAL ENERGY CONVERSION – III

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Each question carries equal marks. Use of scientific calculator is allowed.*

1. What are the various characteristics possessed by commutator winding ? Why is it also termed as pseudo-stationary coil on the moving element ? *10*

2. Why is a rotating field system used in preference to a stationary field ? A 6-pole alternator rotates at 1000 rpm. What is the frequency of the generated voltage ? *10*

3. A 3-phase, star connected, synchronous generator rated at 10 kVA, 230 V has an armature resistance of 0·5 Ω per phase and a synchronous reactance of 1·2 Ω per phase. Calculate the percent voltage regulation at full load at power factors of (a) 0·8 lagging (b) 0·8 leading. *10*

4. Explain in brief, the speed control of induction motor using variable frequency technique. Also write the advantages and disadvantages of variations in frequency. *10*

5. Obtain the transfer function model of a separately excited DC motor on ON-load operation. *10*

6. Discuss the constructional features and working principle of stepper motor in detail. *10*

7. Explain the operating principle of a linear induction motor. Mention some of its applications. *10*

8. What is armature reaction ? Describe the effects of armature reaction on the operation of DC machines. *10*

9. Write short notes on any ***two*** of the following : *2×5=10*

   (a) Schrage Motor

   (b) Brushless Motor

   (c) Hysteresis Motor