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BIEE-004

B.Tech. VIEP - ELECTRICAL ENGINEERING - III / BTELVI

01029

Term-End Examination

December, 2011

BIEE-004 : ELECTRICAL MACHINE - I

Time : 3 hours *Maximum Marks : 70*

Note : Attempt ***any seven*** questions.

1. What is armature reaction ? Describe the effect of armature reaction on the operation of dc machine. How the armature reaction is minimized ? **10**

2. Explain the process of commutation in a dc machine and describe the methods to improve it. **10**

3. Explain the construction and working of dc generator, and also derive the expression for the emf generated. **10**

4. A 250V dc shunt motor having an armature resistance of 0.25Ω carries an armature current of 50A and runs at 750 rpm. If the flux is reduced by 10% find speed. Assume that load torque remains the same. **10**

5. A 240 V dc series motor takes 40 A when giving it's rated output at 1500 rpm. It's resistance is 0.3Ω. Calculate the value of resistance that must be added to obtain the rated torque (a) at starting (b) at 1000 rpm. **10**

6. A Scott connection transformer is fed from 6600V 2-ϕ network and supplies 3-ϕ power at 500 between lines on a 4-wires system. If there are 500 turns per phase on the 3-ϕ side, find the number of turns in the low voltage winding and the position of the tapping of the neutral wire. **10**

7. Explain the construction and working of 3-ϕ transformer. Also write advantages of 3-ϕ transformer. **10**

8. Draw the schematic diagram of 3-winding transformer. Discuss and determine the parameter of three-winding transformer. **10**

9. Explain and draw speed-current and torque - current characteristics of dc series motor. **10**

10. Write short notes ***any two*** of the following : **5x2=10**
    (a) Commutation
    (b) Starting of dc motors
    (c) Tap changing transformer.
