Total No. of Questions : 8]   *[Total No. of Printed Pages : 4*

Roll No ....

EE/EX-501-CBGS
B.Tech., V Semester
Examination, December 2020
Choice Based Grading System (CBGS)
Electrical Machine - II
Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions

ii) All questions carry equal marks.

iii) In case of any doubt or dispute the English version question should be treated as final.

1. a) Describe the Swinburne's test to determine the DC machine efficiency with lab circuit diagram.   7

    b) Explain the term armature reaction and commutation and their effects and remedies related to the DC machine in brief.   7

2. a) A 4-pole DC motor runs at 600 rpm on full load and takes 25 A at 450 V. The armature is lap wound with 500 conductors and flux/pole is 0.085 wb. If the supply voltage and torque both are halved, calculate the speed at which the motor will run, neglect stray losses. 7

600

A 450V

500

0.085

   b) Classify and explain DC motors with speed-torque curve. 7

3. What are brushless DC motors? Explain three phase three pulse (half wave) brushless DC motor with diagram and basic operations principle. Also draw torque-angle characteristics of it and write their applications.

4. a) Determine the voltage regulation of a alternator by synchronous impedance method. Give the lab diagram with brief explanation. 7

   b) The speed regulations of two 800 kW alternators A and B running in parallel are 100% to 104% and 100% to 105% from full load to no load respectively. How will the two alternators share a load of 1000 kW? 7

800 kW

100%

5. Write short notes on : 14
   a) Hunting and damper winding
   b) 'V' curves and inverted 'V' curves
   c) Repulsion motor

6. a) Draw and explain power angle characteristics for salient pole machines. 7

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   b) Derive the emf equation of polyphase synchronous machine. Also explain the methods of harmonic elimination from emf waveform of alternator. 7

7. a) Explain with lab diagram the parallel operation of two alternator with bright lamp method. Also list the conditions for paralleling. 7

   b) What is negative sequence reactance? Explain experimental methods find negative sequence reactance with laboratory diagram. 7

8. Describe the construction, working principle and derive the expression of torque of switched reluctance motor. Also draw the characteristics of SRM.   14

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