b) Give the analysis of short circuit oscillogram of an alternator to determine its various parameters. 7

OR

Write a short notes on the following: 14

i) Hunting and damper winding

ii) 'V' curves and Inverted 'V' curves.

iii) Repulsion motor.

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Roll No .....

EX - 503

B.E. V Semester

Examination, December 2013

Electrical Machine - II

Time : Three Hours

Maximum Marks : 70

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

UNIT - I

1. a) Describe the construction working principle of PMBL DC motor with circuit diagram. 7

   b) Define the commutation. What are the methods for improving the commutation, explain in brief. 7

OR

a) Draw and explain the drooping characteristics of D.C shunt generator.

How you obtain the said characteristics in the Lab, draw the circuit diagram. 7

b) Write a short notes on the following:- 7

i) Lap and Wave winding

ii) Metadyne and Amplidyne machines.

UNIT-II

2. Give the lab circuit diagram to control the speed of a d.c shunt motor with the help of a 3-point starter (starting) for

   (i) Field weakening method.

   (ii) Armature Rheostatic control.

   Explain in brief and draw the truth for constant hp and constant torque operation region for the above. 14

OR

a) A 220V d.c shunt motor at no load takes a current of 3 Amp. The resistance of the armature and shunt field are $0.9\,\Omega$ and $250\,\Omega$ respectively. Estimate the efficiency of the motor when the input current is 18 Amp. Write the assumptions if any. 7

b) Write short notes on the following:- 7

   (i) 4-point starter of D.C.

   (ii) Hopkinson's test.

UNIT-III

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

b) Derive the relation among the E_f, V_t, δ, ρ for the synchronous machine. 7

OR

a) The stator of a three phase, 16-pole alternator has 144 slots and there are 4 conductor per slot connected in two layers and the conductors of each phase are connected in

Calculate: emf induced per phase. The resultant flux in the air gap is 0.05 wbs per pole sinusoidally distributed. Assume the coil span as 150° electrical. 7

b) Give the circuit diagram used in the Laboratory to determine the voltage regulation of alternator by ZPF method and explain the procedure in brief. 7

UNIT-IV

4. a) Give the Lab circuit diagram to determine the X_d and X_q by slip test. What are the conditions fulfilled to prepare the setup, for the above give in detailed the procedure. 7

b) Describe the bright Lamp method with circuit diagram to perform parallel operation of two alternators. What are the conditions and how these conditions are meet out for the same. 7

OR

a) 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

b) Explain in brief the following:-

   i) SCR and its significance

   ii) Power angle equations for salient pole machines with its characteristics. 7

UNIT-V

5. a) Describe the construction, working principle of switched reluctance motor. Also obtain the