OR

4. a) Describe the various schemes used for exciting large synchronous generators. Explain any one with the help of neat sketch. **(8)**

   b) Explain what is meant by synchronizing of alternator. What are the various methods of synchronizing. Explain any one method with the help of neat sketch. **(8)**

Unit - V

5. a) Show that a synchronous motor has no net starting torque. Describe the methods of starting the synchronous motor. **(5)**

   b) What is synchronous condenser. What are the advantages of installing a synchronous condenser in an electrical system. **(4)**

   c) A 2000V, 3 phase, 4 pole, Y connected synchronous motor runs at 1500 rpm. The excitation is constant and corresponds to an open ckt. voltage of 2000v. The resistance is negligible as compared to synchronous reactance of 3Ω/ phase. Determine power input power factor and torque developed for an armature current of 150A. **(7)**

OR

5. a) Explain function of damper winding in a synchronous motor. **(5)**

   b) Explain 'V' and inverted 'V' curves for synchronous motor. **(4)**

   c) A 3 phase star connected 400v synchronous motor takes a power input of 5472 walts at rated voltage. Its synchronous reactance is 10.2Ω per phase and resistance is negligible. If its excitation voltage is adjusted equal to the rated voltage of 400V, Compute the load angle, power factor and the armature current. **(7)**
