

- 6 a. Define and explain the importance of voltage regulation in a three phase alternator. (04 Marks)
- b. Explain how voltage regulation is calculated in a three phase alternator by a pessimistic method. (08 Marks)
- c. A 1200 KVA, 3300V 50Hz three phase star connected alternator has armature resistance of 0.25Ω per phase. A field current of 40A produces a short circuit current of 200A and an open circuit emf of 1100V line to line. Find the voltage regulation on i) full load 0.8 p.f lag ii) full load 0.8 p.f. lead. (08 Marks)
- 7 a. Explain the necessity of parallel operation of three phase alternators. (04 Marks)
- b. Mention the conditions for parallel operation. (03 Marks)
- c. Explain with phaser diagram the effect of change in excitation of one alternator operating in parallel with the other. (05 Marks)
- d. Two alternators working in parallel supply a lighting load of 3000 kW and motor load amounting to 5000 kW at a p.f of 0.71 lagging. One machine is loaded up to 5000 kW at 0.8 p.f lagging. What is the load and p.f of the other machine? (08 Marks)
- 8 a. Explain why synchronous motors are not self starting. Discuss induction motor method of starting. (06 Marks)
- b. Explain the operation of synchronous condenser. (06 Marks)
- c. A 2000V, 3 phase star connected motor has resistance and synchronous reactance per phase of 0.2Ω and 1.9Ω respectively. Calculate the generated (back) emf per phase with an input of 800kW at p.f. 0.8 lagging. (08 Marks)
