

5. a) Why starters are necessary for starting induction motor? Name different starting methods for three phase induction motors. **6**
- b) A three-phase delta connected cage type induction motor when connected directly to 400V, 50Hz supply takes a starting current of 100A in each stator phase. Calculate. **10**
- i) The line current for 'direct on line' starting.
- ii) Line and phase current for star-delta starting, and
- iii) Line and phase starting current for a 70 percent tapping on auto transformer starting.
6. a) Explain speed control of 3 phase induction motor by frequency control. **5**
- b) Explain dynamic braking in 3 phase induction motor. **5**
- c) Explain star-delta starting of 3 phase induction motor. **6**
7. a) Explain equivalent circuit of single phase induction motor. **7**
- b) Explain double field revolving theory and hence show that the single phase induction motors are not self starting. How can it be made self starting? **9**
8. a) Explain construction of single phase induction motor. **8**
- b) Explain any three split phase induction motor starting method. **8**
9. a) Derive the phasor diagram of a cylindrical rotor alternator. What is the effect of armature reaction and how it is included in the phasor diagram for lagging, unity and leading power factor load? **10**
- b) Explain the difference between salient pole and cylindrical pole synchronous machines. **6**
10. a) What do you mean by synchronizing of alternators? Describe any one method of synchronizing. **8**
- b) A 3-phase, 50Hz, 750rpm, Y-connected alternator has flux per pole of 45mwb, sinusoidally distributed. If number of slots per phase are 32 & coil span of 10 slots for single layer winding then calculate the line value of induced emf. Take turns/coil = 8. Also calculate the pitch factor & distribution factor for third harmonic. **8**
