UNIT- I – ALTERNATOR PRINCIPLES AND CONSTRUCTION

PART-A & PART-B QUESTIONS

1. Mention the types of alternator rotor or types of alternator. **(APR 2017, 2018)**
2. Calculate the pitch factor for a winding whose coil span is 150^0 **(APR 2018)**
3. Compare salient & non salient pole alternator. **(APR 2018)**
4. Define slot angle. **(APR 2018)**
5. Define pitch factor. Write the expression for pitch factor. **(APR 2017)**
6. Write any three advantages of rotating field system in a three phase alternator. **(APR 2017)**
7. Write the relation between frequency, speed and number of poles. **(APR 2017)**
8. What principle is used in alternator?
9. What are the requirements of an alternator?
10. Which one of the salient & cylindrical pole alternator is more stable?
11. What is hunting in alternator?
12. What is meant by single layer winding?
13. What is double layer winding?
14. What is lab winding?
15. Write the formulae to calculate the synchronous speed of alternator.
16. Write the expression for distribution factor of breath factor & define.
17. Define full & short pitch winding.
18. Which type of alternator is used in generating stations?
19. What type of rotor has been used in turbo alternator?
20. What is the use of exciter in alternator?
21. What are the methods of obtaining sine wave in alternator?
22. Write the expression for EMF equation of alternator?
23. State the different types of cooling of alternator.
24. Write any three merits of hydrogen cooling.
25. Explain the necessity of damper winding used in alternator.
26. Why cooling is necessity for alternator?
27. What is meant by critical speed of alternator?
28. What is meant by excitation?
29. Calculate the speed of 4 pole of alternator of 50Hz?

PART-C QUESTIONS

1. Explain the working of alternator. **(APR 2017)**
2. Explain the stator and rotor construction details of salient pole alternator. **(APR 2018)**
3. Why cooling is necessity for alternator? Explain the methods of cooling of alternator. Or explain various methods of ventilation system adopted in turbo alternator? **(APR 2018)**
4. Derive the expression for EMF of alternator taking account the pitch factor & distribution factor.
5. Explain briefly construction features of cylindrical type alternator of turbo alternator.
6. Explain the methods of obtaining sine wave in salient pole alternators with neat sketches.
7. Calculate the speed and open circuit phase voltage of a 4 pole, 50Hz star connected alternator with 36 slots, 30 conductors per slot and full pitch. The flux per pole is 0.05 wb sinusoidally distributed.
8. The stator of a star connected 6 pole alternator drive at 1000 rpm has 54 slots. The winding has 10 turns per coil. The flux per pole is 0.16 wb sinusoidally distributed. Assuming full pitched coils. Calculte the RMS value induced emf per phase.

UNIT- II – ALTERNATOR PERFORMANCE AND TESTING

PART-A & PART-B QUESTIONS

1. What is synchronous reactance? **(APR 2017, 2018)**
2. What are the reasons for change in terminal voltage in alternator? **(APR 2018)**
3. What are the causes of voltage drop in alternator? **(APR 2017)**
4. What is necessity and condition of parallel operation alternators? **(APR 2017, 2018)**
5. What is meant by synchronization of alternator? Mention the methods used for synchronization? **(APR 2017, 2018)**
6. What is effective armature resistance?
7. What is leakage reactance?
8. What is armature reactance?
9. What is synchronous impedance?
10. Write the expression for synchronizing impedance.
11. What is armature reaction in alternator?
12. What is meant by voltage regulation? And write the expression for regulation.
13. Write the expression for synchronizing power in terms of generated voltage, synchronizing current and their power factor.
14. Name the two methods for determining the voltage regulation of alternator.
15. When will the switch be closed in dark lamp method in synchronizing of alternators?
16. What are the advantages of parallel operation of alternators?
17. What is meant by synchronizing torque?
18. Draw the load characteristics of three phase alternator.
19. State the reason for voltage drop in alternator.
20. What is meant by alternator on infinite bus bar?
21. Draw the circuit diagram for open and short circuit test of three phase alternator.

PART-C QUESTIONS

1. Explain the armature reaction in alternator for various power factor loads. **(APR 2017)**
2. Deduce an expression for phase induced EMF at lagging power factor load from the vector diagram in synchronous impedance method of EMF method. **(APR 2018)**
3. State the necessity of parallel operation of alternator and explain the dark lamp method of synchronizing of two alternators. **(APR 2017, 2018)**
4. Explain in details the ampere turn method of MMF method of calculating the regulation in an alternator.
5. Explain how to determine the regulation of alternator by zero power factor method of potier method.
6. Explain the synchronizing of two alternators by synchroscope method.
7. Explain the synchronizing of two alternators by Bright lamp method.
8. Discuss the load sharing of alternator in parallel.
9. A three phase star connected synchronous generator is rated at 1.5MVA, 11KV. The armature effective resistance and synchronous reactance are 1.2Ω, 2.5Ω respectively per phase. Calculate the percentage voltage regulation for a load of 1.4375 MVA at (i) 0.8 pf lagging and (ii) 0.8 pf leading (iii) unity pf.

UNIT- III – THREE PHASE INDUCTION MOTOR

PART-A & PART-B QUESTIONS

1. Compare squirrel cage induction motor & Slip ring induction motor. **(APR 2017, 2018)**
2. What is the use of circle diagram? **(APR 2018)**
3. What is meant by crawling of induction motor? **(APR 2018)**
4. Define slip in induction motor. Write the expression for slip in induction motor. **(APR 2017)**
5. Define the relationship between slip, frequency and number of poles of three phase induction motor. **(APR 2017)**
6. What is meant by cogging in three phase induction motor and how it is prevented? **(APR 2017)**
7. What are the types of starter used in three phase slip ring induction motor? **(APR 2018)**
8. Mention the types of three phase induction motor.
9. What are the types of rotor?
10. Which type of induction motor develops higher starting torque?
11. Write the relationship between slip and slip frequency.
12. Write the condition to obtain maximum starting torque.
13. Name the methods of speed control of three phase induction motor.
14. In the cage rotor, the slots are made with slight skew why?
15. Draw the approximate equivalent circuit of induction motor.
16. Why is the speed control by rotor resistance method not suitable for three phase squirrel cage induction motor?
17. What are the tests of experiments to be done to draw circle diagram and equivalent circuit of three phase induction motor?
18. Draw the slip torque characteristics of three phase slip ring induction motor indicating stable & unstable region.
19. Mention the starters used for three phase induction motor.
20. Write the expression for rotor speed of an induction motor.
21. Which type of starter is used to start 10HP, three phase cage induction motor?
22. Write the expression for starting torque of induction motor.
23. What is meant by induction generator?

PART-C QUESTIONS

1. Explain the slip torque characteristics of a three phase slip ring induction motor and show the influence of rotor resistance on these characteristics. **(APR 2017,2018)**
2. Explain the working principle of DOL starter. **(APR 2017, 2018)**
3. Explain the construction and working principle of three phase induction motor.
4. Explain how a rotating field is established in three phase induction motor and draw the vector diagram.
5. Explain with neat sketches construction features of slip ring induction motor.
6. Write the condition to obtain maximum starting torque.
7. Explain no load and blocked rotor test of three phase induction motor.
8. How are equivalent circuit constants of an induction motor determined for assumed slip?
9. Explain briefly the various steps to be followed for constructing circle diagram of an induction motor.
10. Explain any two methods of speed control of induction motor.
11. Explain the speed control of cascading method of two induction motors.
12. Explain rotor resistance method of speed control on induction motor.
13. Explain with neat diagram the working of star delta starter and states its merits and demerits.
14. With neat sketches by working of rotor resistance starter.
15. Explain the working principle of auto transformer starter.'
16. Explain the terms cogging & crawling of three phase induction motor, how it is prevented.
17. Explain the working principle of double cage induction motor.
18. Explain with neat sketches induction generator.

UNIT- IV – SINGLE PHASE INDUCTION MOTOR & SYNCHRONOUS MOTOR

PART-A & PART-B QUESTIONS

1. Why single phase induction motor is not self starting? **(APR 2017, 2018)**
2. Mention the types of method applicable for starting a synchronous motor. **(APR 2017)**
3. What are the main parts of split phase induction motor?
4. Name the types of single phase induction motor.
5. How to make single phase induction motor is self start?
6. Which machine only works the synchronous speed?
7. What is the use of damper winding in synchronous motor?
8. What will be the power factor when the synchronous motor is over excited & under excited?
9. At what power factor synchronous motor draw minimum current?
10. What is 'V' and inverted 'V' curve, draw its curve?
11. State the application of synchronous motor?
12. What are the applications of single phase induction motor?
13. Compare synchronous motor & three phase induction motor.
14. State the application of repulsion motor.
15. What is capacitor start capacitor run motor?

PART-C QUESTIONS

1. Explain the construction and working details of split phase motor. States its applications. **(APR 2017, 2018)**
2. Why the synchronous motor is not self starting, explain the working principle of operation. **(APR 2017)**
3. Draw and explain 'V' and inverted 'V' curve of synchronous motor. **(APR 2018)**
4. Explain the construction and working details of capacitor start motor. Mention its applications.
5. Explain the construction and working details of capacitor start capacitor run motor. States its applications.
6. Explain the construction and working details of permanent capacitor motor. States its applications.
7. Draw with neat sketches explain the operation of shaded pole motor.
8. Draw and explain the working principle of repulsion motor.
9. Explain briefly repulsion start induction motor.
10. Explain briefly repulsion induction motor. States its applications.
11. With neat sketches, explain construction working principle of universal motor.
12. Explain how the three phase motor operated in single phase supply.
13. What are the methods employ to start the synchronous motor, explain?
14. Explain the effect of change in excitation on armature current and power factor.
15. Explain how synchronous motor is used to improve the power factor.

UNIT- V – SPECIAL AC MACHINES AND SPECIAL DC MACHINES

PART-A & PART-B QUESTIONS

1. What is meant by step angle in stepper motor? **(APR 2018)**
2. What is linear induction motor? **(APR 2018)**
3. What is meant by stepper motor? States its types & applications. **(APR 2017, 2018)**
4. State the application of permanent magnet synchronous motor.
5. What are the types of synchros?
6. State the application of synchros.
7. What is meant by servo motor? Mention the types of servo motor?
8. State the applications of servo motor.
9. State the application of permanent magnet DC motor.
10. State the advantages of permanent magnet DC motor.

PART-C QUESTIONS

1. With diagram explain the operation of permanent magnet synchronous motor. **(APR 2017, 2018)**
2. Briefly explain variable reluctance stepper motor. **(APR 2017, 2018)**
3. Explain synchros and its types.
4. Explain the application of synchros.
5. What is meant by servo mechanism and also explain AC servo motor with neat sketches.
6. Explain the construction working principle of linear induction motor. Draw its characteristics.
7. With the diagram explain permanent magnet DC motor.
8. Explain the basic principle of operation of DC servo motor.
9. With diagram, explain permanent magnet stepper motor.