ENERGY CONVERSION - II

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2 marks questions

1. What is the operating principle of alternator?
2. Define pitch factor and distribution factor.
3. What is armature reaction?
4. Write down the advantages of distributed winding.
5. Define synchronous impedance.
6. What is voltage regulation?
7. What is infinite bus?
8. What are the uses of damper winding in synchronous motor?
9. Operating principle of synchronous motor.
10. Why copper bars are skewed in Squirrel cage induction motors?
11. Define slip.
12. What is plugging?
13. Why single-phase induction motor in not self-starting?
14. What is Step angle?
15. Operating principle of stepper motor.
16. What is detent torque?
17. Define commutation.
18. What is eddy current?
19. Why tap changer is provided on HV winding of transformer?

5 marks question

1. Why armature coil is stationery and field coil is rotating in alternator?
2. Derive Relationship between speed and frequency.
3. Derive E.M.F equation of alternator.
4. What are the conditions for parallel operation of alternators?
5. Why synchronous mot is not self-starting?
6. What is hunting? Write down the methods to reduce hunting in synchronous motor.
7. Constructional feature of Squirrel cage and Slip ring induction motors.
8. Explain the working of three phase induction motor.
9. Frequency of emf in stator of 4 pole induction motor is 50 Hz and that in rotor is 1.5 Hz. What is the slip and speed of motor?
10. Derive relation between full load torque and starting torque.
11. Explain double field revolution theory in single phase induction motor.
12. Write short notes on universal motor.
13. Working principle of Repulsion start Motor.
14. Working principle of variable reluctance stepper Motor.
15. Write short notes on hysteresis loss
16. Write down the condition for parallel operation of three phase transformer.
17. Write down the reasons for parallel operation of three phase transformer.

10 marks question

1. Explain harmonics, its causes and impact on winding factor.
2. Explain Armature reaction and its effect on emf at different power factor of load.
3. Explain the testing of alternator (OC and SC test).
4. What is synchronization? Explain in details about the necessities of parallel operation of alternators.
5. Explain the different method of synchronization of two alternators.
6. Write down the methods for starting of synchronous motor.

7. Explain effect of excitation on Armature current and power factor in synchronous motor.
8. Derive expression for torque during starting and running conditions and derive conditions for maximum torque.
9. Methods of starting and different types of starters used for three phase Induction motor.
10. Explain Torque-slip characteristics of induction motor.
11. Explain the different methods of speed control of induction motor.
12. Write different types of single-phase induction motor.
13. Classification of commutator motor.
14. Classification of stepper motor
15. What is harmonics? Write down the causes of harmonics in generated voltage. How to reduce harmonics in alternator?
16. Explain different grouping in three phase transformer.
18. Explain off load and on load tap changer in three phase transformer.
19. A 550 V, 55 KVA, 1 phase alternator has effective resistance of 0.2 ohm. 10 Amp Field current produces 200 Amp armature current on SC test and armature voltage 450 V on OC test. Calculate X_s and voltage regulation at full load with power factor 0.8 lagging.