



- a) to provide starting torque only b) to reduce noise level c) to reduce eddy currents d) to prevent hunting and provide the starting torque.
3. The back emf set up in the stator of a synchronous motor will depend on
a) rotor speed only b) rotor excitation only c) rotor excitation and rotor speed d) coupling angle, rotor speed and excitation.
4. Which of the following factor should be identical for two alternators running in parallel?
a) Phase sequence b) Voltage c) Frequency d) All of the above
5. The main reason for voltage drop in an alternator is
a) Armature resistance b) Synchronous Reactance c) Armature Reactance d) All of the above
6. Consider two alternators are running in parallel now if the excitation of the one of the alternator is changed then it will
a) Reduce speed b) Change power factor c) Change load demand d) Change frequency
7. The function of Potier triangle is to separate
a) Armature voltage and stator voltage b) Armature leakage reactance and armature reaction m.m.f.
c) Stator losses and Rotor Losses d) All of the above
8. If the input to the prime mover of an alternator is kept constant but the excitation is changed, then the
a) Active component of output is changed b) Power factor remains constant c) Power factor is reduced
d) Reactive component of the output is changed
9. The power factor of an alternator depends on
a) Core Losses b) Speed of Motor c) Type of Load d) Armature losses
10. The driving power from the prime mover driving the alternator is lost but the alternator remains connected to the supply network and the field supply also remains on. The alternator will
a) Behave as synchronous motor with opposite rotation direction b) Behave as induction motor with opposite rotation direction
c) Behave as synchronous motor with same rotation direction d) Will get burn
11. In capacitor start single-phase motors
a) current in the starting winding leads the voltage b) current in the starting winding lags the voltage
c) current in the starting winding is in phase with voltage in running winding d) none of the above
12. In a split phase motor
a) the starting winding is connected through a centrifugal switch b) the running winding is connected through a centrifugal switch
c) both starting and running windings are connected through a centrifugal switch d) centrifugal switch is used to control supply voltage
13. A centrifugal switch is used to disconnect starting winding when motor has
a) run for about 1 minute b) run for about 5 minutes c) picked up about 50 to 75 per cent of rated speed d) picked up about 10 to 25 per cent of rated speed.
14. In repulsion motor direction of rotation of motor
a) is opposite to that of brush shift b) is the same as that of brush shift c) is independent of brush shift.
15. The drive motor used in a mixer-grinder is a
a) dc motor. b) induction motor. c) synchronous motor. d) universal motor.

With my best wishes
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This exam measure the following ILOs (a19, b14, c5, c13, c14, c15, c16, d1)

Answer as much as you can

Q1: (15 Mark)

- a- Describe the zero power factor test of a synchronous machine. [5 Marks]
 b- The following data give the open-circuit and full-load zero p.f saturation curves for a 15,000-kVA. 11,000 V, 3- ϕ , 50-Hz, star-connected turbo-alternator:

Field AT 10^3	10	18	24	30	40	45	50
O.C. kV	4.9	8.4	10.1	11.5	12.8	13.3	13.65
ZPF at full kV		0				10.2	

Find the armature reaction, the armature reactance and the synchronous reactance.
 Deduce the regulation for full-load at 0.8 power lagging. [10 Marks]

Q2: (10 Mark)

- a) What are the preconditions necessary for performing the Open Circuit characteristics test? [3 Marks]
 b) Why the synchronous reactance of Alternator is different at different values of field current? [3 Marks]
 c) Why it is necessary to separate the effect of armature reaction and leakage reactance of the Alternator? [4 Marks]

Q3: (15 Mark)

- a) Describe the load test of a single phase induction motor test. [5 Marks]
 b) Determine an approximate model for a single-phase AC induction motor with the following test results:

Blocked Rotor Test: $V_{sc} = 110V$, $I_{sc} = 17.67A$, $P_{sc} = 1342W$

No-Load Test: $V_o = 110V$, $I_o = 3.84 A$, $P_o = 53.9W$

Rotational Losses 17W

DC Resistance 1.3 Ω [10 Marks]

Q4: (20 Mark)

Choose the correct answer with explain your choice.

- An unexcited single phase synchronous motor is
 a) reluctance motor b) repulsion motor c) universal motor d) AC series motor.
- The damping winding in a synchronous motor is generally used