

TSGENCO/TSTRANSCO

Assistant Engineer Electrical Previous Question Papers

Q.1 The two windings of a transformer is

- conductively linked.
- inductively linked.
- not linked at all.
- electrically linked.

Q.2 A salient pole synchronous motor is running at no load. Its field current is switched off. The motor will

- come to stop.
- continue to run at synchronous speed.
- continue to run at a speed slightly more than the synchronous speed.
- continue to run at a speed slightly less than the synchronous speed.

Q.3 The d.c. series motor should always be started with load because

- at no load, it will rotate at dangerously high speed.
- it will fail to start.
- it will not develop high starting torque.
- all are true.

Q.4 The frequency of the rotor current in a 3 phase 50 Hz, 4 pole induction motor at full load speed is about

- 50 Hz.
- 20 Hz.
- 2 Hz.
- Zero.

Q.5 In a stepper motor the angular displacement

- can be precisely controlled.
- it cannot be readily interfaced with micro computer based controller.
- the angular displacement cannot be precisely controlled.
- it cannot be used for positioning of work tables and tools in NC machines.

Q.6 The power factor of a squirrel cage induction motor is

- low at light load only.
- low at heavy load only.
- low at light and heavy load both.
- low at rated load only.

Q.7 The generation voltage is usually

- between 11 KV and 33 KV.
- between 132 KV and 400 KV.
- between 400 KV and 700 KV.
- None of the above.

Q.8 When a synchronous motor is running at synchronous speed, the damper winding produces

- damping torque.
- eddy current torque.
- torque aiding the developed torque.
- no torque.

Q.9 If a transformer primary is energised from a square wave voltage source, its output voltage will be

- A square wave.
- A sine wave.
- A triangular wave.
- A pulse wave.

Q.10 In a d.c. series motor the electromagnetic torque developed is proportional to

- I_a
- $(I_a)^2$
- $1/I_a$
- $1/(I_a)^2$

Q.11 In a 3 – phase induction motor running at slip 's' the mechanical power developed in terms of air gap power

- $(s-1)P_g$
- $(B) P_g/(1-s)$
- $(1-s)P_g$
- $s.P_g$

Q.12 In a 3 – phase induction motor the maximum torque

- is proportional to rotor resistance r_2
- **does not depend on r_2**
- is proportional to $\sqrt{r_2}$
- is proportional to $(r_2)^2$

Q.13 In a d.c. machine, the armature mmf is

- stationary w.r.t. armature.
- rotating w.r.t. field.
- **stationary w.r.t. field.**
- rotating w.r.t. brushes.

Q.14 In a transformer the voltage regulation will be zero when it operates at

- unity p.f.
- **leading p.f.**
- lagging p.f.
- zero p.f. leading.

Q.15 The maximum power in cylindrical and salient pole machines is obtained respectively at load angles of

- 90,900
- <90,900
- 90,>900
- **90,<900**

Q.16 The primary winding of a 220/6 V, 50 Hz transformer is energised from 110 V, 60 Hz supply. The secondary output voltage will be

- 3.6 V.
- 2.5 V.
- **3.0 V.**
- 6.0 V.

Q.17 The emf induced in the primary of a transformer

- is in phase with the flux.
- lags behind the flux by 90 degree.
- **leads the flux by 90 degree.**
- is in phase opposition to that of flux.

Q.18 The relative speed between the magnetic fields of stator and rotor under steady state operation is zero for a

- dc machine.
- 3 phase induction machine.
- synchronous machine.
- single phase induction machine.

Ans: all options are correct

Q.19 The current from the stator of an alternator is taken out to the external load circuit through

- slip rings.
- commutator segments.
- solid connections.
- carbon brushes.

Q.20 A motor which can conveniently be operated at lagging as well as leading power factors is the

- squirrel cage induction motor.
- wound rotor induction motor.
- synchronous motor.
- DC shunt motor.

Q.21 A hysteresis motor

- is not a self-starting motor.
- is a constant speed motor.
- needs dc excitation.
- can not be run in reverse speed.

Q.22 The most suitable servomotor for low power applications is

- a dc series motor.
- a dc shunt motor.
- an ac two-phase induction motor.
- an ac series motor.

Q.23 The size of a conductor used in power cables depends on the

- operating voltage.
- power factor.
- current to be carried.
- type of insulation used.

Q.24 Out of the following methods of heating the one which is independent of supply frequency is

- electric arc heating
- induction heating
- electric resistance heating
- dielectric heating

Q.25 A two-winding single phase transformer has a voltage regulation of 4.5% at full-load and unity power-factor. At full-load and 0.80 power-factor lagging load the voltage regulation will be

- 4.5%.
- less than 4.5%.
- more than 4.5%.
- 4.5% or more than 4.5%.

Q.26 In a dc shunt motor the terminal voltage is halved while the torque is kept constant. The resulting approximate variation in speed " ω " and armature current " I_a " will be

- Both ω and I_a are doubled.
- ω is constant and I_a is doubled
- ω is doubled while I_a is halved
- ω is constant but I_a is halved

Q.27 A balanced three-phase, 50 Hz voltage is applied to a 3 phase, 4 pole, induction motor. When the motor is delivering rated output, the slip is found to be 0.05. The speed of the rotor m.m.f. relative to the rotor structure is

- 1500 r.p.m.
- 1425 r.p.m.
- 25 r.p.m.
- 75 r.p.m.

Q.28 An alternator is delivering rated current at rated voltage and 0.8 power-factor lagging case. If it is required to deliver rated current at rated voltage and 0.8 power-factor leading, the required excitation will be

- less.
- more.
- more or less.
- the same.

Q.29 A ceiling fan uses

- split-phase motor.
- capacitor start and capacitor run motor.
- universal motor.
- **capacitor start motor.**

Q.30 A stepper motor is

- **a dc motor.**
- a single-phase ac motor.
- a multi-phase motor.
- a two phase motor.

Q.31 The 'sheath' is used in cable to

- **provide strength to the cable.**
- provide proper insulation.
- prevent the moisture from entering the cable.
- avoid chances of rust on strands.

Q.32 The drive motor used in a mixer-grinder is a

- dc motor.
- induction motor.
- synchronous motor.
- **universal motor.**

Q.33 A 1:5 step-up transformer has 120V across the primary and 600 ohms resistance across the secondary. Assuming 100% efficiency, the primary current equals

- **0.2 Amp.**
- 5 Amps.
- 10 Amps.
- 20 Amps.

Q.34 A dc shunt generator has a speed of 800 rpm when delivering 20 A to the load at the terminal voltage of 220V. If the same machine is run as a motor it takes a line current of 20A from 220V supply.

The speed of the machine as a motor will be

- 800 rpm.
- more than 800 rpm.
- **less than 800 rpm.**
- both higher or lower than 800 rpm.

Q.35 A 50 Hz, 3-phase induction motor has a full load speed of 1440 r.p.m. The number of poles of the motor are

- 4.
- 6.
- 12.
- 8.

36. In a dc shunt motor the terminal voltage is halved while the torque is kept constant. The resulting approximate variation in speed " ω " and armature current " I_a " will be

- Both ω and I_a are doubled.
- ω is constant and I_a is doubled
- ω is doubled while I_a is halved
- ω is constant but I_a is halved

37. The current from the stator of an alternator is taken out to the external load circuit through

- slip rings.
- commutator segments.
- solid connections.
- carbon brushes.

38. A motor which can conveniently be operated at lagging as well as leading power factors is the

- squirrel cage induction motor.
- wound rotor induction motor.
- synchronous motor.
- DC shunt motor.

39. The frequency of the rotor current in a 3 phase 50 Hz, 4 pole induction motor at full load speed is about

- 50 Hz.
- 20 Hz.
- 2 Hz.
- Zero.

40. The size of a conductor used in power cables depends on the

- operating voltage.
- power factor.
- current to be carried.
- type of insulation used.

41. The most suitable servomotor for low power applications is

- a dc series motor.
- a dc shunt motor.
- an ac two-phase induction motor.
- an ac series motor.

42. A two-winding single phase transformer has a voltage regulation of 4.5% at full-load and unity power-factor. At full-load and 0.80 power-factor lagging load the voltage regulation will be

- 4.5%.
- less than 4.5%.
- more than 4.5%.
- 4.5% or more than 4.5%.

43. When a synchronous motor is running at synchronous speed, the damper winding produces

- damping torque.
- eddy current torque.
- torque aiding the developed torque.
- no torque.

44. If a transformer primary is energised from a square wave voltage source, its output voltage will be

- A square wave.
- A sine wave.
- A triangular wave.
- A pulse wave.

45. In a d.c. series motor the electromagnetic torque developed is proportional to

- I_a
- $(I_a)^2$
- $1/I_a$
- $1/(I_a)^2$

46. The two windings of a transformer is

- conductively linked.
- inductively linked.
- not linked at all.
- electrically linked.

47. In a 3 – phase induction motor running at slip 's' the mechanical power developed in terms of air gap power

- $(s-1)P_g$
- $(B) P_g/(1-s)$
- $(1-s)P_g$
- $s.P_g$

48. In a 3 – phase induction motor the maximum torque

- is proportional to rotor resistance r_2
- **does not depend on r_2**
- is proportional to $\sqrt{r_2}$
- is proportional to $(r_2)^2$

49 In a d.c. machine, the armature mmf is

- stationary w.r.t. armature.
- rotating w.r.t. field.
- **stationary w.r.t. field.**
- rotating w.r.t. brushes.

50. In a transformer the voltage regulation will be zero when it operates at

- unity p.f.
- **leading p.f.**
- lagging p.f.
- zero p.f. leading.

51.. A salient pole synchronous motor is running at no load. Its field current is switched off. The motor will

- come to stop.
- **continue to run at synchronous speed.**
- continue to run at a speed slightly more than the synchronous speed.
- continue to run at a speed slightly less than the synchronous speed.

52. The maximum power in cylindrical and salient pole machines is obtained respectively at load angles of

- 90°, 90°
- $<90^\circ, 90^\circ$
- $90^\circ, >90^\circ$
- **$90^\circ, <90^\circ$**

53. A stepper motor is

- a dc motor.
- a single-phase ac motor.
- a multi-phase motor.
- a two phase motor.

54. The primary winding of a 220/6 V, 50 Hz transformer is energised from 110 V, 60 Hz supply. The secondary output voltage will be

- 3.6 V.
- 2.5 V.
- 3.0 V.
- 6.0 V.

55. In a stepper motor the angular displacement

- can be precisely controlled.
- it cannot be readily interfaced with micro computer based controller.
- the angular displacement cannot be precisely controlled.
- it cannot be used for positioning of work tables and tools in NC machines.

56. The emf induced in the primary of a transformer

- is in phase with the flux.
- lags behind the flux by 90 degree.
- leads the flux by 90 degree.
- is in phase opposition to that of flux.

57. The d.c. series motor should always be started with load because

- at no load, it will rotate at dangerously high speed.
- it will fail to start.
- it will not develop high starting torque.
- all are true.

58. The relative speed between the magnetic fields of stator and rotor under steady state operation is zero for a

- dc machine.
- 3 phase induction machine.
- synchronous machine.
- single phase induction machine.

Ans: all options are correct

59. The power factor of a squirrel cage induction motor is

- low at light load only.
- low at heavy load only.
- low at light and heavy load both.
- low at rated load only.

60. A hysteresis motor

- is not a self-starting motor.
- is a constant speed motor.
- needs dc excitation.
- can not be run in reverse speed.

61. Out of the following methods of heating the one which is independent of supply frequency is

- electric arc heating
- induction heating
- electric resistance heating
- dielectric heating

62. A balanced three-phase, 50 Hz voltage is applied to a 3 phase, 4 pole, induction motor. When the motor is delivering rated output, the slip is found to be 0.05. The speed of the rotor m.m.f. relative to the rotor structure is

- 1500 r.p.m.
- 1425 r.p.m.
- 25 r.p.m.
- 75 r.p.m.

63. An alternator is delivering rated current at rated voltage and 0.8 power-factor lagging case. If it is required to deliver rated current at rated voltage and 0.8 power-factor leading, the required excitation will be

- less.
- more.
- more or less.
- the same.

64. The generation voltage is usually

- between 11 KV and 33 KV.
- between 132 KV and 400 KV.
- between 400 KV and 700 KV.
- None of the above.

65. A ceiling fan uses

- split-phase motor.
- capacitor start and capacitor run motor.
- universal motor.
- capacitor start motor.