

1. Condition for maximum power output for a d.c. motor is
  - a)  $E_b = V$
  - b)  $E_b = V/2$
  - c)  $E_b = I_a R_a$
  - d)  $E_b = 0.5 I_a R_a$
2. A simple method of increasing the voltage of an d.c. generator is
  - a) to decrease the air gap flux density
  - b) to increase the speed of rotation
  - c) to decrease the speed of rotation
  - d) to increase the length of armature
3. The speed of a d.c. generator is increased, the generated emf
  - a) increases
  - b) decreases
  - c) remains constant
  - d) decreases and then increases
4. A 4-pole lap-wound armature has 480 conductors and a flux per pole of 25 m Wb. The emf generated, when running at 600 rpm, will be
  - a) 240 V
  - b) 120 V
  - c) 60 V
  - d) 30 V
5. The field flux of a d.c. motor can be controlled to achieve
  - a) The speeds lowers than rated speed
  - b) The speeds higher than rated speed
  - c) The speeds at rated speed
  - d) None of these
6. A series motor is started without load. The effect is that
  - a) the torque increases rapidly
  - b) the speed increases rapidly
  - c) current drawn increases rapidly
  - d) the back emf decreases
7. The motor used for intermittent, high torque loads is
  - a) d.c. shunt motor
  - b) d.c. series motor
  - c) differential compound motor
  - d) cumulative compound motor
8. If the field of a d.c. shunt motor is open
  - a) it will continue to run at its rated speed
  - b) the speed of the motor will become very high
  - c) the motor will stop
  - d) the speed of motor will decrease
9. Armature reaction is attributed to
  - a) the effect of magnetic field setup by armature current
  - b) the effect of magnetic field setup by field current
  - c) copper loss in armature
  - d) the effect of magnetic field setup by back emf
10. When the electric train is moving down a hill the d.c. motor acts as
  - a) d.c. series motor
  - b) d.c. shunt motor
  - c) d.c. series generator
  - d) d.c. shunt generator
11. Inter-poles are meant for
  - a) increasing the speed of the motor
  - b) decreasing counter emf
  - c) reducing sparking at the commutator
  - d) converting armature current to d.c.
12. As the load is increased, the speed of a shunt motor
  - a) remains constant
  - b) increases slightly
  - c) reduces slightly
  - d) none of these
13. The function of compensating windings placed in slots in the pole shoes is
  - a) to neutralise cross magnetising effect
  - b) to neutralise the demagnetising effect
  - c) to neutralise both the effects
  - d) to avoid flash over around the commutator
14. In a d.c. machine the armature m.m.f. is always directed along the:
  - a) polar axis
  - b) brush axis
  - c) interpolar axis
  - d) none of these
15. Under-commutation gives rise to
  - a) sparking at the leading edge of the brush
  - b) sparking at the trailing edge of the brush

- c) no sparking at all  
d) sparking at the middle of the brush
16. In d.c. machines, the polarity of the interpole is
- same as that of the main pole behind for the generators and that of the main pole ahead for the motors
  - same as that of the main pole ahead for both the generators and the motors
  - same as that of the main pole ahead for the generators and that of the main pole behind for the motor
  - same are that of the main pole behind for both the generators and the motors
17. The resistance of shunt winding is
- more than series winding
  - more than armature
  - less than series and armature
  - more than series and armature
18. The function of the starter is
- to limit the armature current at the time of starting
  - to protect the motor from over loading
  - to protect the motor from low voltage
  - all of these
19. Maximum efficiency of the motor will occur when
- Copper losses > Iron losses
  - Copper losses < Iron losses
  - Copper losses = Friction losses
  - Copper losses = Constant losses
20. The direction of rotation of a d.c. shunt motor can be reversed by interchanging
- the supply terminals
  - the field terminals only
  - the armature terminals only
  - either field or the armature terminals
21. In d.c. generators, the polarity of interpoles is
- same as that of main pole behind
  - same as that of main pole ahead
  - opposite to that of the main pole
  - none of these
22. The most economics method of electrical braking is
- regenerative braking
  - dynamic braking with self excitation
  - dynamic braking with separate excitation
  - plugging
23. Plugging of d.c. motors is normally executed by
- reversing the field polarity
  - reversing the armature polarity
  - reversing the armature polarity
  - connecting a resistance across the armature
24. For d.c. shunt motor, speed control by armature resistance variations is best suited for
- Constant power drive
  - Variable power drive
  - Constant torque drive
  - Variable torque drive
25. For d.c. shunt motor, speed control by the variation of field flux is best suited for
- Constant power drive
  - Variable power drive
  - Constant torque drive
  - Variable torque drive
26. The efficiency of a d.c. machine is maximum when the variable losses is equal to
- the constant losses
  - the square of the constant losses
  - the square root of the constant losses
  - zero
27. The core losses in a d.c. machine occur due to
- hysteresis only
  - eddy current only
  - armature current
  - both hysteresis and eddy currents

28. If the thickness of laminations is increased, then
- the eddy current loss decreases
  - the eddy current loss increases
  - the hysteresis loss decreases
  - the hysteresis loss increases
29. Transformer is used to change the values of
- voltage
  - frequency
  - power
  - power factor
30. Rating of transformer is given in
- kVa
  - kVAR
  - kW
  - Watts
31. Class-B insulation can withstand a maximum temperature of
- 120 °C
  - 130 °C
  - 105 °C
  - 135 °C
32. Two transformers are operating in parallel. They will share the load depending upon their
- efficiency
  - ratings
  - leakage reactance
  - per-unit impedance
33. A sinusoidal emf
- lags the flux inducing it by 180°
  - lags the flux inducing it by 90°
  - leads the flux inducing it by 90°
  - leads the flux inducing it by 180°
34. The no-load current of a transformer in terms of full load current is usually
- 1 to 3%
  - 3 to 15%
  - 9 to 12%
  - 12 to 20%
35. What type of the core is used for a high frequency transformer?
- Open iron core
  - Air core
  - Closed iron core
  - None of these
36. The transformer oil used in transformers provides.
- insulation and cooling
  - cooling and lubrication
  - insulation and lubrication
  - insulation, cooling and lubrication
37. The full load copper-loss in a transformer is 400 W. At half load, the copper-loss will be
- 400 W
  - 200 W
  - 100 W
  - 50 W
38. Distribution transformers are designed to have maximum efficiency nearly
- at full load
  - at 50% of F.L.
  - at no load
  - none of these
39. The purpose of conservator in transformers is
- to cool the windings
  - to prevent moisture in the transformers
  - to take up contraction and expansion of oil
  - none of these
40. The maximum temperature permitted for class A insulation is
- 180°C
  - 165°C
  - 120°C
  - 105°C
41. Which of the following transformers is smallest?
- 1 kVA, 50 Hz
  - 1 kVA, 200 Hz
  - 1 kVA, 400 Hz
  - 1 kVA, 600 Hz
42. Salient pole type rotor are generally used with prime movers of
- high speed
  - low speed
  - medium speed
  - low and high speed
43. The frequency of a 4-pole alternator running at 1500 r.p.m. will be
- 150 Hz
  - 100 Hz
  - 50 Hz
  - 25 Hz
44. Different methods of synchronizing the alternators generally used are
- Dark and bright lamp method
  - Stroboscopic method
  - Dark lamp method only
  - Both a) and b) are correct

45. For a full pitch winding, the generated voltages in both coil sides are
- exactly in phase
  - in quadrature
  - exactly  $180^\circ$  out of phase
  - approximately  $180^\circ$  out of phase
46. Distributed winding instead of concentrated winding has the effect of improving the shape of voltage as a sine wave and
- increasing the speed of machine
  - adding rigidity and mechanical strength to winding
  - reducing armature reaction
  - none of these
47. A synchronous motor can run at
- a leading power factor
  - unity power factor
  - lagging or leading or unity power factor
  - zero power factor
48. The function of damper winding in synchronous motor is to provide, starting torque and
- to reduce speed
  - to prevent hunting
  - to increase speed
  - none of these
49. For a uniformly distributed winding with a phase spread of  $\beta$  degrees, the distributed factor at fundamental frequency is
- $\sin \beta / \beta$
  - $\sin \beta / \beta \times 180 / \pi$
  - $(2 \sin \beta / 2) / \beta$
  - $(\sin \beta / 2) / \beta \times 360 / \pi$
50. The synchronous motor runs at
- less than synchronous speed
  - synchronous speed
  - more than synchronous speed
  - none of the above
51. The construction of synchronous motor is similar to
- d.c. compound motor
  - slip ring induction motor
  - d.c. shunt generator
  - alternator
52. The synchronous motor runs on
- 3-phase a.c. supply
  - 3-phase a.c. and d.c. supply
  - d.c. supply only
  - 3-phase a.c. and single phase a.c.
53. An unexcited single phase synchronous motor is
- reluctance motor
  - universal motor
  - repulsion motor
  - a.c. series motor
54. The shape of torque/slip curve of an induction motor is
- hyperbola
  - parabola
  - straight line
  - rectangular parabola
55. The purpose of skewing of rotor slots in induction motor is:
- to reduce the magnetic hum to motor
  - to increase the distribution factor
  - to reduce the locking tendency of rotor
  - to increase the breadth factor
56. The no load current of an induction motor is
- 1% of F.L. current
  - 10% of F.L. current
  - Negligible
  - 40-50% of F.L. current
57. The rotor input, when rotor copper-loss in an induction motor is 600 W and slip is 3% is
- 18 kW
  - 200 kW
  - 20 kW
  - 25 kW
58. The speed of the rotor field of an induction motor
- is equal to synchronous speed
  - is equal to motor speed
  - is equal to zero
  - none of these

59. In terms of air-gap power,  $P_g$  the rotor copper loss and the mechanical power developed are given by
- $sP_g$  and  $(1-s)P_g$
  - $(1-s)P_g$  and  $sP_g$
  - $P_g$  and  $P/s$
  - $P_g/s$  and  $P_g(1-s)$
60. The direction of rotation of 3-phase revolving field can be changed by interchanging
- R and Y phases only
  - B and Y phases only
  - R and B phases only
  - any two phases
61. At a slip of 4%, the maximum possible speed of a 3-phase squirrel-cage induction motor is
- 2880 r.p.m.
  - 3000 r.p.m.
  - 1500 r.p.m.
  - 1440 r.p.m.
62. The relationship between rotor frequency  $f_2$  slip  $s$ , and stator frequency  $f_1$  is given by
- $f_2 = f_1/s$
  - $f_2 = sf_1$
  - $f_2 = (1-s)f_1$
  - none of these
63. In three-phase power measurement by Two Wattmeter method the power factor of load will be
- $\sqrt{3} \frac{(W_1 - W_2)}{W_1 + W_2}$
  - $W_1 + W_2$
  - $\frac{W_1 - W_2}{W_1 + W_2}$
  - $\frac{W_1 W_2}{\sqrt{W_1 + W_2}}$
64. Low resistance is measured by
- De sauty's bridge
  - Maxwell's bridge
  - Kelvin's double bridge
  - Wien bridge
65. Siemens is a unit for measuring
- Conductance
  - Resistance
  - Flux density
  - Electric field
66. Manganin is
- an insulator material.
  - a semiconductor material
  - used for making inductor
  - an alloy used to make standard resistors
67. A CRO can signals
- a.c. signals
  - d.c. signals
  - both a.c. and d.c signals
  - time-invariant signals
68. Schering bridges is used to measure
- dielectric loss
  - the inductance
  - low resistance
  - mutual inductance
69. Which bridge is used to determine frequency?
- Anderson bridge
  - De Sauty's bridge
  - Wien bridge
  - None of these
70. A CRO uses
- electromagnetic focussing
  - electro-static focussing
  - both focussing techniques
  - no focussing technique
71. Inductance is measured by
- Wien bridge
  - Schering bridge
  - Marwell's bridge
  - Hay bridge
72. Hot-wire instruments give
- The average value
  - The rms value calculated from the average value
  - The rms value from the peak value and the crest factor
  - The true rms value based on heat produced
73. Wattmeter measures
- apparent power
  - true power
  - volt ampere
  - volt ampere reactive
74. The speed of energy meter can be controlled by

- a) series magnet
- b) braking magnet
- c) shunt magnet
- d) shading band

75. The creeping error in single phase Energy meter can be minimized by

- a) adjusting braking magnet
- b) use of short circuited loops on the outer limbs of the shunt magnet
- c) drilling two holes in the disc on the opposite side of the spindle
- d) adjusting the shaded band

ANSWER KEY		
1. b	26. a	51. d
2. b	27. d	52. b
3. a	28. b	53. a
4. b	29. a	54. d
5. b	30. a	55. c
6. b	31. b	56. d
7. d	32. d	57. c
8. b	33. b	58. a
9. a	34. a	59. a
10. c	35. b	60. d
11. c	36. a	61. a
12. c	37. c	62. b
13. d	38. b	63. a
14. b	39. c	64. c
15. b	40. d	65. a
16. c	41. d	66. d
17. d	42. b	67. c
18. d	43. c	68. a
19. d	44. d	69. c
20. d	45. a	70. b
21. b	46. b	71. c
22. a	47. c	72. d
23. b	48. b	73. b
24. c	49. d	74. b
25. a	50. b	75. c