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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 commuter
   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
   a) same as that of the main pole behind for the generators and that of the main pole ahead for the motors
   b) same as that of the main pole ahead for both the generators and the motors
   c) same as that of the main pole ahead for the generators and that of the main pole behind for the motor
   d) same are that of the main pole behind for both the generators and the motors
17. The resistance of shunt winding is

a) more than series winding
b) more than armature
c) less than series and armature
d) more than series and armature

18. The function of the starter is
a) to limit the armature current at the time of starting
b) to protect the motor from over loading
c) to protect the motor from low voltage
d) all of these

19. Maximum efficiency of the motor will occur when
a) Copper losses > Iron losses
b) Copper losses < Iron losses
c) Copper losses = Friction losses
d) Copper losses = Constant losses

20. The direction of rotation of a d.c. shunt motor can be reversed by interchanging
a) the supply terminals
b) the field terminals only
c) the armature terminals only
d) either field or the armature terminals

21. In d.c. generators, the polarity of interpoles is
a) same as that of main pole behind
b) same as that of main pole ahead
c) opposite to that of the main pole
d) none of these

22. The most economics method of electrical braking is
a) regenerative braking
b) dynamic braking with self excitation
c) dynamic braking with separate excitation
d) plugging

23. Plugging of d.c. motors is normally executed by
a) reversing the field polarity
b) reversing the armature polarity
c) reversing the armature polarity
d) connecting a resistance across the armature

24. For d.c. shunt motor, speed control by armature resistance variations is best suited for
a) Constant power drive
b) Variable power drive
c) Constant torque drive
d) Variable torque drive

25. For d.c. shunt motor, speed control by the variation of field flux is best suited for
a) Constant power drive
b) Variable power drive
c) Constant torque drive
d) Variable torque drive

26. The efficiency of a d.c. machine is maximum when the variable losses is equal to
a) the constant losses
b) the square of the constant losses
c) the square root of the constant losses
d) zero

27. The core losses in a d.c. machine occur due to
a) hysteresis only
b) eddy current only
c) armature current
d) both hysteresis and eddy currents

28. If the thickness of laminations is increased, then
a) the eddy current loss decreases
b) the eddy current loss increases
c) the hysteresis loss decreases
d) the hysteresis loss increases

29. Transformer is used to change the values of
a) voltage b) frequency
c) power d) power factor

30. Rating of transformer is given in
a) kVa b) kVAR
c) kW d) Watts

31. Class-B insulation can withstand a maximum temperature of
a) 120 °C b) 130 °C
c) 105 °C d) 135 °C

32. Two transformers are operating in parallel. They will share the load depending upon their
a) efficiency
b) ratings
c) leakage reactance
d) per-unit impedance

33. A sinusoidal emf
a) lags the flux inducing it by 180°
b) lags the flux inducing it by 90°
c) leads the flux inducing it by 90°
d) leads the flux inducing it by 180°

34. The no-load current of a transformer in terms of full load current is usually
a) 1 to 3% b) 3 to 15%
c) 9 to 12% d) 12 to 20%

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35. What type of the core is used for a high frequency transformer?
   a) Open iron core
   b) Air core
   c) Closed iron core
   d) None of these

36. The transformer oil used in transformers provides.
   a) insulation and cooling
   b) cooling and lubrication
   c) insulation and lubrication
   d) insulation, cooling and lubrication

37. The full load copper-loss in a transformer is 400 W. At half load, the copper-loss will be
   a) 400 W b) 200 W
   c) 100 W d) 50 W

38. Distribution transformers are designed to have maximum efficiency nearly
   a) at full load b) at 50% of F.L.
   c) at no load d) none of these

39.The purpose of conservator in transformers is
   a) to cool the windings
   b) to prevent moisture in the transformers
   c) to take up contraction and expansion of oil
   d) none of these

40. The maximum temperature permitted for class A insulation is
   a) 180°C b) 165°C
   c) 120°C d) 105°C

41. Which of the following transformers is smallest?
   a) 1 kVA, 50 Hz
   b) 1 kVA, 200 Hz
   c) 1 kVA, 400 Hz
   d) 1 kVA, 600 Hz

42. Salient pole type rotor are generally used with prime movers of
   a) high speed b) low speed
   c) medium speed d) low and high speed

43. The frequency of a 4-pole alternator running at 1500 r.p.m. will be
   a) 150 Hz b) 100 Hz
   c) 50 Hz d) 25 Hz

44. Different methods of synchronizing the alternators generally used are
   a) Dark and bright lamp method
   b) Stroboscopic method
   c) Dark lamp method only
   d) Both a) and b) are correct

45. For a full pitch winding, the generated voltages in both coil sides are
   a) exactly in phase
   b) in quadrature
   c) exactly 180° out of phase
   d) approximately 180° out of phase

46. Distributed winding instead of concentrated winding has the effect of improving the shape of voltage as a sine wave and
   a) increasing the speed of machine
   b) adding rigidity and mechanical strength to winding
   c) reducing armature reaction
   d) none of these

47. A synchronous motor can run at
   a) a leading power factor
   b) unity power factor
   c) lagging or leading or unity power factor
   d) zero power factor

48. The function of damper winding in synchronous motor is to provide, starting torque and
   a) to reduce speed
   b) to prevent hunting
   c) to increase speed
   d) none of these

49. For a uniformly distributed winding with a phase spread of β degrees, the distributed factor at fundamental frequency is
   a) $\sin\beta/\beta$
   b) $\sin\beta/\beta\times180/\pi$
   c) $(2\sin\beta/2)/\beta$
   d) $(\sin\beta/2)/\beta\times360/\pi$

50. The synchronous motor runs at
   a) less then synchronous speed
   b) synchronous speed
   c) more than synchronous speed
   d) none of the above

51. The construction of synchronous motor is similar to
   a) d.c. compound motor
   b) slip ring induction motor
   c) d.c. shunt generator
   d) alternator

52. The synchronous motor runs on
   a) 3-phase a.c. supply

b) 3-phase a.c. and d.c. supply
c) d.c. supply only
d) 3-phase a.c. and single phase a.c.

53. An unexcited single phase synchronous motor is
a) reluctance motor
b) universal motor
c) repulsion motor
d) a.c. series motor

54. The shape of torque/slip curve of an induction motor is
a) hyperbola
b) parabola
c) straight line
d) rectangular parabola

55. The purpose of skewing of rotor slots in induction motor is:
a) to reduce the magnetic hum to motor
b) to increase the distribution factor
c) to reduce the locking tendency of rotor
d) to increase the breadth factor

56. The no load current of an induction motor is
a) 1% of F.L. current
b) 10% of F.L. current
c) Negligible
d) 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
a) 18 kW b) 200 kW
c) 20 kW d) 25 kW

58. The speed of the rotor field of an induction motor
a) is equal to synchronous speed
b) is equal to motor speed
c) is equal to zero
d) none of these

59. In terms of air-gap power, P_g the rotor copper loss and the mechanical power developed are given by
a) sP_g and $(1-s)P_g$
b) $(1-s)P_g$ and sP_g
c) P_g and P/s
d) P_g/s and $P_g(1-s)$

60. The direction of rotation of 3-phase revolving field can be changed by interchanging
a) R and Y phases only
b) B and Y phases only
c) R and B phases only
d) any two phases

61. At a slip of 4%, the maximum possible speed of a 3-phase squirrel-cage induction motor is
a) 2880 r.p.m. b) 3000 r.p.m.
c) 1500 r.p.m. d) 1440 r.p.m.

62. The relationship between rotor frequency f_2 slip s, and stator frequency f_1 is given by
a) $f_2 = f_1/s$ b) $f_2 = sf_1$
c) $f_2 = (1-s)f_1$ d) none of these

63. In three-phase power measurement by Two Wattmeter method the power factor of load will be
a) $\sqrt{3}\dfrac{(W_1-W_2)}{W_1+W_2}$ b) W_1+W_2
c) $\dfrac{W_1-W_2}{W_1+W_2}$ c) $\dfrac{W_1W_2}{\sqrt{W_1+W}_2}$

64. Low resistance is measured by
a) De sauty's bridge
b) Maxwell's bridge
c) Kelvin's double bridge
d) Wien bridge

65. Siemens is a unit for measuring
a) Conductance b) Resistance
c) Flux density d) Electric field

66. Manganin is
a) an insulator material.
b) a semiconductor material
c) used for making inductor
d) an alloy used to make standard resistors

67. A CRO can signals
a) a.c. signals
b) d.c. signals
c) both a.c. and d.c signals
d) time-invariant signals

68. Schering bridges is used to measure
a) dielectric loss
b) the inductance
c) low resistance
d) mutual inductance

69. Which bridge is used to determine frequency?
a) Anderson bridge
b) De Sauty's bridge
c) Wien bridge
d) None of these

70. A CRO uses

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a) electromagnetic focussing
b) electro-static focussing
c) both focussing techniques
d) no focussing technique

71. Inductance is measured by
a) Wien bridge
b) Schering bridge
c) Marwell's bridge
d) Hay bridge

72. Hot-wire instruments give
a) The average value
b) The rms value calculated from the average value
c) The rms value from the peak value and the crest factor
d) The true rms value based on head produced

73. Wattmeter measures
a) apparent power
b) true power
c) volt ampere
d) 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 mater 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

76. Megger is used for measuring
a) low resistance
b) high resistance
c) medium resistance
d) very low resistance

77. Megger can be used for testing
a) open circuit only
b) short circuit only
c) open and short circuit both
d) high resistance circuit only

78. Speed of the megger is kept at
a) 100 r.p.m. b) 120 r.p.m.
c) 140 r.p.m. d) 160 r.p.m.

79. The meter constant of energy meter is given by
a) rev./kW b) rev./kWh
c) rev./watt d) rev./kWh

80. The pressure coil consists of
a) more number of turns of fine wire
b) less number of turns of fine wire
c) less number of turns of thick wire
d) more number of turns of thick wire

81. In dynamometer type of wattmeter, which of the coil is split up into two parts
a) pressure coil
b) current coil
c) pressure coil and current coil both
d) none of the above

82. The most commonly used type of single phase energy meter is
a) dynamometer type
b) electrostatic type
c) induction type
d) moving coil type

83. Moving Iron instruments are
a) attraction type
b) repulsion type
c) attraction and repulsion type
d) dynamometer type

84. Moving coil instruments are
a) permanent magnet type
b) dynamometer type
c) induction type
d) permanent magnet and dynamometer type

85. Moving Iron instruments can be used on
a) a.c. and d.c. both
b) a.c. only
c) d.c. only
d) half wave rectified a.c.

86. Moving coil permanent magnet instruments can be used on
a) a.c. and d.c.
b) a.c. only
c) d.c. only
d) half wave rectified a.c.

87. The scale of moving iron (M.I.) instruments is
a) uniform
b) cramped
c) first uniform then conjusted
d) none of the above

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88.The cost of M.L. instruments as compared to M.C. instruments is
a) high b) low
c) same d) very high

89. The meter used for measuring electrical quantities are
a) Tachometer
b) Micrometer
c) Measuring Instruments
d) Spherometer

90. The meter used for used for measuring electrical energy of consumer is called
a) wattmeter
b) ampere hour meter
c) kWh meter
d) avometer

91. Electrostatic effect for producing deflecting torque is used in
a) ammeters
b) voltmeters
c) watt-meters
d) energy meters

92. A thermocouple motor can be used to measure
a) d.c. current only
b) a.c. current only
c) both a.c. as well as d.c. currents
d) rms values only

93. Inductance is measured in terms of capacitance and resistance by
a) Schering bridge
b) Anderson bridge
c) Maxwell-wein bridge
d) Wein bridge

94. Lissajous patterns are used to measure
a) voltage and frequency
b) frequency and phase shift
c) frequency and amplitude distortion
d) amplitude and flux

95. The MHD system generates:
a) a.c. only
b) d.c. only
c) a.c. and d.c. only
d) either a.c. or d.c.

96. A Kaplan turbine is
a) inward flow, impulse turbine
b) outward flow, reaction turbine
c) a high head mixed flow turbine
d) low head axial flow turbine

97. The efficiency of electrostatic precipitator is as high as
a) 99.6 percent b) 90 percent
c) 85 percent d) 80 percent

98. Hydrogen when used for cooling in a large alternator, it
a) increases the life of insulation
b) decreases the life of insulation
c) it does not effect insulation either way
d) none of these

99. An over-excited synchronous motor on no load is known as
a) synchronous induction generator
b) synchronous condenser
c) alternator
d) none of these

100. KVAR is equal to
a) kW tan ϕ b) kW sin ϕ
c) kVA cos ϕ d) None of these

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Answers Key	
1. b	51. d
2. b	52. b
3. a	53. a
4. b	54. d
5. b	55. c
6. b	56. d
7. d	57. c
8. b	58. a
9. a	59. a
10. c	60. d
11. c	61. a
12. c	62. b
13. d	63. a
14. b	64. c
15. b	65. a
16. c	66. d
17. d	67. c
18. d	68. a
19. d	69. c
20. d	70. b
21. b	71. c
22. a	72. d
23. b	73. b
24. c	74. b
25. a	75. c
26. a	76. b
27. d	77. c
28. b	78. d
29. a	79. b
30. a	80. a
31. b	81. b
32. d	82. c
33. b	83. c
34. a	84. d
35. b	85. a
36. a	86. c
37. c	87. b
38. b	88. a
39. c	89. c
40. d	90. c
41. d	91. b
42. b	92. c
43. c	93. b
44. d	94. b
45. a	95. c
46. b	96. d
47. c	97. a
48. b	98. a
49. d	99. b
50. b	100.a

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