Department of EEE
EE8401 –Electrical Machines-II
Unit III - MCQ Bank

1.The difference between the stator synchronous speed and rotor speed is called
    A. Leading speed
    B. Lagging speed
    C. Slip Speed
    D. Slow Speed
Answer: C

2.In three phase induction motor maximum torque is Inversely Proportional to the Stator Voltage
    A. Speed of Rotor
    B. Rotor Reactance
    C. Decreasing Slip speed
Answer: B

3.No-Load test on an induction motor is conducted to find which of the following losses?
    A. Stator core loss
    B. Rotational Loss
    C. Stator Copper loss
    D. All of the above
Answer: D

4. If the torque of the induction motor decreases the_____
    A. Speed of the rotor Increases
    B. Speed of the Rotor Decreases
    C. The current of the Rotor Decreases
    D. Power of the Motor Increases
Answer: A

5.Find the number of poles required, if the frequency is 50Hz and speed of the motor is 500 rpm.
    A. 24 Poles
    B. 12 poles
    C. 5 Poles
    D. 10 Poles
Answer: B

6.In squirrel cage induction, the rotor slots are slightly skewed in order to reduce
    A. Windage Loss
    B. Eddy current Loss
    C. Reduce Magnetic humming
    D. Friction losses

Answer: C

7. Low-frequency supply is obtained by
    A. Motor-generator set
    B. Frequency changer
    C. Either Motor-generator set or Frequency changer
    D. Both Motor-generator set or Frequency changer
Answer: C

8.What type of operate a direct-on-line starter consists of a coil operated
    A. Capacitor operated
    B. A coil Operated
    C. Eddy current Operated
    D. Resistor Operated
Answer: B

9.Rotating magnetic fields are also used in 3-phase induction motors rotor developing

    A. Eddy current
    B. Voltage Lag
    C. Load current
    D. Phase current
Answer: A

10.One of the speed control methods of a 3 phase induction motor is
    A. V/F control
    B. Stator current control
    C. Core loss control
    D. Eddy current Control
Answer: A

11.If the air gap in an induction motor is increased_____
    A. The speed of the rotor increases
    B. The power factor will decrease
    C. The windage losses will increase
    D. Current drawn by the motor increase
Answer: B

12.In three-phase induction motor reversing the supply in two of the phases is called as
    A. Pole changing
    B. Plugging
    C. increase the torque
    D. To control current
Answer: B

13.The availability of full -rated torque at starting is obtained from an induction motor is
    A. Rotor resistance control

B. Stator voltage control
C. Slip ring control
D. Line current control

Answer: A

14. Why is the rotor skewed?
    A. To prevent starting current
    B. To provide stability
    C. To reduce magnetic turn
    D. To reduce rotor locking tendency

Answer: D

15. The speed of the motor for the frequency of 60 Hz and 4 poles motor is?
    A. 3600 rpm
    B. 1800 rpm
    C. 1500 rpm
    D. None of these

Answer: B

16. A 3 phase, 400-V, 50 Hz 4 pole induction motor is fed from a 3-phase supply and runs of 1425 rpm. The frequency of the rotor emf is
    A. 2.5 Hz
    B. 50 Hz
    C. 48 Hz
    D. Zero

Answer: A

17. In the case of traveling cranes, the motor preferred for boom hoist is _____
    A. Slip Ring Induction Motor
    B. Squirrel cage induction motor
    C. Synchronous Motor
    D. Single-phase motor

Answer: A

18. The purpose of skewing of rotor slots in an induction motor is to_____
    A. Reduce magnetic hum
    B. Increase the distribution factor
    C. Reduce the locking tendency of the rotor
    D. Increase the air gap

Answer: C

19. In motor circuit static frequency changers are used for _____
    A. Power factor improvement
    B. Speed regulation
    C. Improve cooling
    D. Reversal of direction

Answer: B

20.NEMA standards rate motors according to_____
   A. Weight
   B. Horsepower
   C. Voltage
   D. Frame
Answer: B

21.What is the maximum length of the flexible conduit in the motor installation?
   A. More than 5 meter
   B. Less than 1.25 meter
   C. Less than 2.25 meter
   D. Less than 3.25 meter
Answer: B

22.A three-phase induction motor is analogous to
   A. Generator
   B. Rotating transformer
   C. Rotating Motor
   D. Rotating converter
Answer: B

23.For the production of induced e.m.f, the field system of an electric machine____.
   A. Must be on the rotor
   B. Must be on the stator
   C. May be on rotor and stator
   D. None of the above
Answer: C

24.15 minutes rated motors are suitable for
   A. Light duty cranes
   B. Medium duty
   C. Heavy-duty cranes
   D. All option are correct
Answer: A

25. The speed of the rotating magnetic field in an induction motor is known as the
   A. Synchronous speed
   B. Shaft speed
   C. Slip speed
   D. Effective speed
Answer: A

26.Light duty cranes are generally used in
   A. Automobile workshop
   B. Pumping Station

C. Power Houses
D. All of the above
Answer: D

27. In an induction motor, if the rotor resistance is equal to stand-still reactance then the maximum torque is
   A. Equal to starting torque
   B. Less than the starting torque
   C. More than the starting torque
   D. None of these
Answer: A

28. Why is the air gap between the yoke and armature of an electric motor kept smaller?
   A. To achieve a stronger magnetic field
   B. To avoid overheating of the machine
   C. To make the station easier
   D. None of these
Answer: A

29. What is the effect produced by the electric current in an electric motor?

   A. Magnetic effect only
   B. Magnetic as well as the heating effect
   C. Heating effect only
   D. Heating as well as the chemical effect
Answer: B

30. If the stator voltage of a squirrel cage induction motor is reduced to 50 percent of its rated value, the torque developed is reduced by how many percentages of its full load value?
   A. 50%
   B. 25%
   C. 75%
   D. 57.7%
Answer: C

31. The shaft of an induction motor is made of
   A. Stainless steel
   B. Carbon steel
   C. Cast iron
   D. Aluminium
Answer: B

32. Slip ring of an induction motor is usually made up of
   A. Aluminium
   B. Copper
   C. Phosphorus Bronze

D. Carbon

Answer: C

33. A 3-phase 440 V, 50 Hz induction motor has 4% slip. The frequency of rotor current will be
   A. 50 Hz
   B. 25 Hz
   C. 5 Hz
   D. 2 Hz
Answer: D

34. The starting torque of a squirrel-cage induction motor is
   A. Full-load torque
   B. Slightly more than full-load torque
   C. Low
   D. Negligible
Answer: D

35. The efficiency of an induction motor is about
   A. 100%
   B. 80-90%
   C. 50-60%
   D. Less than 50%

Answer: B

36. A double squirrel-cage induction motor has
   A. Two series winding in stator
   B. Two parallel windings in stator
   C. Two parallel winding in Rotor
   D. Two rotors moving in opposite direction
Answer: C

37. For starting of an induction motor, star/delta starting can be considered equivalent to an autotransformer starter with the ratio of
   A. 33.3%
   B. 50%
   C. 100%
   D. 57.7%
Answer: D

38.An induction motor is analogous to
   A. Auto-transformer
   B. Two windings transformer with secondary short circuited
   C. Two windings transformer with secondary open circuited
   D. Synchronous motor
Answer: B

39. No load test of 3-phase induction motor used to determine
    A. Variable loss
    B. Constant loss
    C. Eddy current loss only
    D. Hysteresis loss only
Answer: B

40. Blocked rotor test in an induction motor is used to determine
    A. Leakage impedance
    B. Copper loss
    C. Both 1 & 2
    D. None of the above
Answer: C

41. Which of the following losses are negligible in blocked rotor test?
    A. Mechanical losses
    B. Iron losses
    C. Both 1 & 2
    D. None of the above
Answer: C

42. The rotor power output of a 3-phase induction motor is 30 KW and corresponding slip is 4%. The rotor copper loss will be
    A. 625 Watt
    B. 250 Watt
    C. 1000 Watt
    D. 1250 Watt
Answer: D

43. In an induction motor if the air gap is increased than which of the following statement is correct
    A. Power factor will decrease
    B. Power factor will increase
    C. Speed will increase
    D. Speed will decrease
Answer: A

44. If the applied rated voltage per phase is reduced to one-half, then the starting torque of squirrel cage induction motor becomes
    A. 4 times the initial value
    B. 2 times the initial value
    C. 1/4 of the initial value
    D. 1/2 times the initial value
Answer: C

45. The value of power factor of an induction motor operating at no load is
    A. 0.9 lagging
    B. Unity

C. 0.2 lead

D. 0.2 lag

Answer: D

46. What is the ratio of rotor input power to rotor copper loss in an induction motor?
   A. $1/(1 – S)$
   B. $1 – S$
   C. 1/S
   D. S

Answer: C

47. Semi closed slots or totally closed slots are used in induction motors to improve
   A. Starting current
   B. Starting Torque
   C. Power Factor
   D. Pull-out Torque

Answer: C

48. The rotor slots are slightly skewed in squirrel cage induction motor in order to
   A. Increasing Rotor bar strength
   B. Prevent cogging effect
   C. Both 1 & 2
   D. None of the above

Answer: B

49. If an induction machine is run at above the synchronous speed it acts as
   A. Synchronous Motor
   B. Synchronous Generator
   C. Induction Generator
   D. None of the above

Answer: C

50. The best method to increase the starting torque of a 3-phase slip ring induction motor is
   A. Rotor Resistance
   B. Supply voltage
   C. Supply Frequency
   D. None of the above

Answer: A

51. A small air gap in 3 phase induction motor helps to
   A. Reduce cogging effect
   B. Reduce Crawling effect
   C. Reduce Magnetizing effect
   D. All of the above

Answer: C

52. In case of induction motors the ratio of core length to pole pitch for minimum cost is taken as

A. 2 – 3
B. 1.5 – 2
C. 3 – 5
D. 4 – 6
Answer: B

53. In an induction motor, there is decrease in maximum power factor when the dispersion coefficient is
    A. Remain Same
    B. Decreased
    C. Constant
    D. Increased
Answer: D

54. Induction motors have the advantage of
    A. Less Maintenace
    B. Less cost
    C. Simple in construction
    D. All of the above
Answer: D

55. What happens if fifth harmonics is given to induction motor?
    A. Short-circuit the motor
    B. Motor will rotate in reverse direction
    C. Motor will rotate in the same direction
    D. None of the above
Answer: B

56. The maximum EMF is induced in the rotor of a 3-phase induction motor when it
    A. No-Load
    B. Full-load
    C. Half-load
    D. is blocked
Answer: D

57. The power supplied to a three-phase induction motor is 32 kW and the stator losses are 1200 Watt. If the slip is 5 percent. determine the rotor copper loss
    A. 2.8 kW
    B. 3.5 kW
    C. 4 kW
    D. 1.54 kW
Answer: D

58. From the above question find the total mechanical power developed by the Rotor
    A. 30.28 kW
    B. 29.26 kW
    C. 25.2 kW
    D. 14.45 Kw

E. Answer: B

59. Find the efficiency of the induction motor neglecting rotor iron loss.
    A. 100 %
    B. 50%
    C. 25%
    D. 89%
Answer: D

60. If the stator voltage of a squirrel cage induction motor is reduced to 50 percent of its rated value, the torque developed is reduced by how many percentages of its full load value?
    A. 50%
    B. 25%
    C. 75%
    D. 57.7%
Answer: C

61. The rotor current in a 3-phase induction motor is ………….. slip.
    A. Directly proportional to
    B. Inversely Proportional to
    C. Independent
    D. None of the above
Answer: A

62. At starting, rotor reactance of a 3-phase induction motor is ………… as compared to rotor resistance.
    A. Small
    B. Equal to
    C. Large
    D. None of the above
Answer: C

63. When an induction motor is running at full-load, rotor reactance is ………… rotor resistance.
    A. Very large
    B. Large
    C. Comparable
    D. None of the above
Answer: C

64. If the slip of a 3-phase induction motor increases, the p.f. of the rotor circuit is

    A. Decreased
    B. Remain unchanged
    C. Increased
    D. None of the above

Answer: A

65. The magnetising current drawn by a 3-phase induction motor is about ……….. of full-load stator current.
    A. 30 – 50 %
    B. 15 – 20%
    C. 10 – 15%
    D. 5%
Answer: A

66. The value of load current of 3 phase induction motor is _____ of full load current
    A. 25 – 35 %
    B. 5 – 10%
    C. 2 – 4%
    D. None of the above
Answer: A

67. The starting torque of a 3-phase induction motor is ………… supply voltage.
    A. Independent of
    B. Directly proportional
    C. Directly proportional to square
    D. Inversely proportional
Answer: C

68. The starting torque of an induction motor is maximum when rotor resistance per phase is …………… rotor reactance/phase.
    A. Equal to
    B. Less than
    C. More than
    D. None of the above
Answer: A

69. The maximum torque of a 3-phase induction motor under running conditions is
    A. Inversely proportional to the Rotor reactance at standstill
    B. Inversely proportional to the supply voltage
    C. Directly proportional to the Resistance
    D. None of the above
Answer: A

70. If the supply voltage of a 3-phase induction motor is increased two times, then, torque is
    A. Increased 4 times
    B. Decreased 4 Times
    C. Increased twice
    D. Remain the same
Answer: A

71. The 3-phase induction motor is so designed that the rotor should have ……….. under running conditions.

A. High resistance
B. Low resistance
C. Large slip
D. High reactance
Answer: B

72. If a 3-phase induction motor is running at slip s, then, rotor copper loss is equal to.
    A. $(1 - s) \times$ Rotor Input
    B. $(1 + s) \times$ Rotor input
    C. s $\times$ Rotor input
    D. s $\times$ stator input
Answer: C

73. If an induction motor is running at slip s, then rotor output is
    A. **$(1 - s) \times$ Rotor input**
    B. $(1 + s) \times$ Rotor input
    C. s $\times$ Rotor input
    D. None of the above
Answer: A

74. If the motor were to run at 65% speed as in 'the given above question, but operate as a 6 pole machine, what will be the slip and frequency of the rotor currents?
    A. 4.175 Hz
    B. 3.286 Hz
    C. 2.458 Hz
    D. 1.432 Hz
Answer: A

75. For a slip of 0.05, find the ratio of rotor speeds with the motor operating with 4 and 6 poles respectively.
    A. 2.8
    B. 1.5
    C. 3.2
    D. 4.5
Answer: B