Electrical Engineering

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1) A three phase, 50Hz, 4 pole squirrel cage induction motor has its stator rewound for 6 poles without any alterations in the rotor. The motor would now run at a speed:

- ○ < 1000 rpm
- ○ < 1500 rpm
- ○ < 3000 rpm
- ○ < 0 rpm

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2) A three phase induction motor is running at a slip s. If its two supply leads are interchanged, then its slip at that instant is equal to :

- ○ 2s
- ○ 1-s
- ○ 2-s
- ○ 1+s

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3) The stator of a 3 phase 6 pole wound rotor induction motor is connected to a 50Hz source but its rotor is energized from a 20Hz source. The rotor would run at a speed of

- ◉ 1600 rpm
- ○ 600 rpm
- ○ 1000 rpm
- ○ 400 rpm

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4) The maximum torque produced (Tem) produced by a three phase induction motor:

- ○ Increases as the stator resistance increases
- ○ Decreases as the stator resistance increases
- ○ Decreases as the stator resistance decreases
- ○ Is unaffected by change in stator resistance

5. In an alternator, voltage drops occurs in

(A) armature resistance only

(B) armature resistance and leakage reactance

(C) armature resistance, leakage reactance and armature reaction

(D) armature resistance, leakage reactance, armature reaction and earth connections.

6. The magnitude of various voltage drops that occur in an alternator, depends on

(A) power factor of the load

(B) load current

(C) power factor x load current

(D) power factor x (load current)^2.

7. In an alternator, at lagging power factor, the generated voltage per phase, as compared to that at unity power factor

(A) must be same as terminal voltage

(B) must be less than the terminal voltage

(C) must be more than the terminal voltage

(D) must be 1.41 time the terminal voltage.

8. The power factor of an alternator depends on

(A) Load

(B) Speed of rotor

(C) Core losses

(D) Armature losses.

9. Which kind of rotor is most suitable for turbo alternators which arc designed to run at high speed ?

(A) Salient pole type

(B) Non-salient pole type

(C) Both (A) and (B) above

(D) None of the above.

10. Salient poles are generally used on

(A) high speed prime movers only

(B) medium speed prime movers only

(C) low speed prime movers only

(D) low and medium speed prime movers.

11. The frequency of voltage generated in an alternator depends on

(A) number of poles

(B) rotative speed

(C) number of poles and rotative speed

(D) number of poles, rotative speed and type of winding.

12. The frequency of voltage generated by an alternator having 8 poles and rotating at 250 rpm is

(A) 60 Hz

(B) 50 Hz

(C) 25 Hz

(D) 16 2/3 Hz.

13. An alternator is generating power at 210 V per phase while running at 1500 rpm. If the need of the alternator drops to 1000 rpm, the generated voltage per phase will be

(A) 180 V

(B) 150 V

(C) 140 V

(D) 105 V.

14. A 10 pole AC generator rotates at 1200 rpm. The frequency of AC voltage in cycles per second will be

(A)120

(B) 110

(C) 100

(D) 50.

15. The number of electrical degrees passed through in one revolution of a six pole synchronous alternator is

(A)360

(B)720

(C) 1080

(D)2160 .

16. Fleming's left hand rule may be applied to an electric generator to find out

(A) direction of rotor rotation

(B) polarity of induced emf

(C) direction of induced emf

(D) direction of magnetic field.

17. If the input to the prime mover of an alternator is kept constant but the excitation is changed, then the

(A) reactive component of the output is changed

(B) active component of the output is changed

(C) power factor of the load remains constant

(D) power factor of the load reduces.

18. An alternator is said to be over excited when it is operating at

(A) unity power factor

(B) leading power factor

(C) lagging power factor

(D) lagging to leading power factor.

19. When an alternator is running on no load the power supplied by the prime mover is mainly consumed

(A) to meet iron losses

(B) to meet copper losses

(C) to meet all no load losses

(D) to produce induced emf in armature winding.

20.. You need a transformer to convert 220 AC voltage to 110 V AC. What will be turns ratio?

A. 10

B. 20

C. 2

D. 0.2

21. What happens if you operate a transformer beyond the rated voltage?

A. Saturation of transformer core

B. High magnetizing current

C. Possibility of burning out of transformer

D. All of the above

22. Voltage regulation of an ideal transformer is-

A. 0%

B. 100%

C. 50%

D. -50%

23. Electro-Dynamo meter is used to-

A. Measure load torque

B. Give load torque

C. C. Measure starting torque

D. All of the above

24. An induction motor has a starting torque of 2 N-m. For which of the load torque below, the motor will not start?

A. 1 N-m

B. 0.5 N-m

C. 3 N-m

D. 1.33 N-m

25. Tachometer is used to-

A. Measure current

B. Measure locked-rotor torque

C. Count rotation of motor

D. All of the above

26. Increasing the speed-control rheostat resistance of the wound-rotor motor-

A. Increases the starting torque

B. Decrease the starting torque

C. Does not have any effect on starting torque

D. Has an unpredictable effect

27. Starting an induction motor with a load torque larger than locked-rotor torque-

A. Does not have any effect on motor

B. May burn out motor

C. Increases the rotor current resulting in heating

D. B and C above

28. 7 What will be the mmf of a wire having 3 turns and carrying 2 A of current?

a) 1 AT b) 1.5 AT c) 6 AT d) 2 AT

29. The ability of a material to remain magnetized after removal of the magnetizing force is known as

a) hysteresis b) Reluctance c) permeability d) retentivity

30. When the speed at which a conductor is moved through a magnetic field is increased, the induced voltage

a) decreases b) increases c) remains unchanged d) none

31. The electric field inside a conductor

(a) must be zero (b) may be non-zero (c) must be non-zero (d) Both (1) and (3) are correct

32. A resister carries a current I. The power dissipated is 'P'. The power dissipated if the same resistor carries the current of 3I is?

a) P b) 9P c) 3P d) none

33. If 4μF and 2μF capacitors are connected in series, the equivalent capacitor is?

a) 6 μF b) 1.33 μF c) 4 μF d) 2 μF

34. .A certain appliance uses 350 W. If it is allowed to run continuously for 24 days, how many kilowatt-hours of energy does it consume?

a) 20.16 kWh b) 201.6 kWh c) 2.01 kWh d) 8.4 kWh

35. A 15 V source is connected across a 12 Ω resistor. How much energy is used in three minutes?

a) 938 Wh b) 0.938 Wh c) 56.25 Wh d) 5.6 Wh

36. An SCR is considered to be a semi controlled device because

A. it can be turned OFF but not ON with a gate pulse.

B. it conducts only during one half cycle of an alternating current wave.

C. it can be turned ON but not OFF with a gate pulse.

D. it can be turned ON only during one half cycle of an AC.

37. A single phase one pulse controlled circuit has a resistance R and counter emf E load 400 sin(314 t) as the source voltage. For a load counter emf of 200 V, the range of firing angle control is

A. 30° to 150°.
B. 30° to 180°.
C. 60° to 120°.
D. 60° to 180°.

38. Which statement is true for latching current ?

A. It is related to turn off process of the device.
B. It is related to conduction process of device.
C. It is related to turn on process of the device.
D. Both C and D.

39. 10. If the fault current is 2000 A, the relay setting is 50% and CT ratio is 400 : 5, then plug setting multiplier will be

A. 10.
B. 15.
C. 25.
D. 50.

40. For audio frequency applications, the popular oscillator used is

A. Wien bridge oscillator
B. Hartley oscillator
C. Crystal oscillator
D. Phase shift oscillator

41. Which of the following is not a sinusoidal oscillator?

A. LC oscillator
B. RC phase shift oscillator
C. Relaxation oscillator
D. Crystal oscillator

42. How many entries will be in the truth table of a 3 input NAND gate ?

A. 3
B. 6
C. 8
D. 9

43. The concept of V/f control of inverters driving induction motors resuls in

A. constant torque operation
B. speed reversal
C. reduced magnetic loss
D. hormonic elimination

44. Polarity of supply voltage is reversed in which type of braking?
    A. Regenerative braking.
    B. Dynamic braking.
    C. Plugging.
    D. None of these.

45. What type electric drive is used in cranes?
    A. Multimotor.
    B. Group.
    C. Individual.
    D. Both A and C.