L S-1

Booklet Series - A   033/231

PAPER – I
ELECTRICIAN
(THEORY)
SEMESTER – IV

TIME: 3 HRS.   **MARKS: 150**

Note: Attempt all questions.
All questions carry equal marks.
This paper carries negative marking. 25% marks will be deducted for each wrong answer.

Choose the correct answer.

1. Which material is used for wiring continuous bus bar?
   a) Aluminium   b) Copper   c) Both (a) & (b)   d) None of these

2. Which among these is a method of wiring?
   a) Joint box   b) Tee system   c) Loop in system   d) All of these

3. What is the maximum load that can be connected in a circuit connecting only lighting points.
   a) 500 watts   b) 750 watts   c) 800 watts   d) 1000 watts

4. What is the maximum number of lighting points that can be connected in a circuit?
   a) 5   b) 10   c) 8   d) 12

5. For household wiring and small units, the following should be used for safety measure.
   a) MCB   b) ACB   c) OCB   d) MCCB

6. A series of gradually decreasing sine wave oscillations is called _____.
   a) Ringing   b) Slew   c) Overshooting   d) Undershooting

7. What is the Basic Three Electrical Quantities?
   a) Resistance, Capacitance, Inductance   b) Power, Voltage, Conductance
   c) Voltage, Current, Resistance (Impedance)   d) Current, Reluctance, Inductance

8. In case of short circuit _____ current will flow in the circuit.
   a) Zero   b) Very low   c) Normal   d) Infinite

9. Ω (Ohm) is the unit of _____.
   a) Resistance (R)
   b) Inductive Reactance (X_L)
   c) Capacitive Reactance (X_C)
   d) All of these

10. If a 100 watts Bulbs ON for 10 hours, then what will be the amount of consumed Electricity?
    a) 100 watts
    b) 100 watts per hour
    c) 1000 watts (1kW)
    d) 1 kWh = 1 unit of electricity

11. The starting capacity of a single phase motor is _____.
    a) Electrolytic capacitor
    b) Ceramic capacitor
    c) Paper capacitor
    d) None of these

12. The motor used in household refrigerators is _____.
    a) DC series motor
    b) DC shunt motor
    c) Universal motor
    d) Single phase induction motor

13. A capacitor start single phase induction motor will usually have a power factor of _____.
    a) Unity
    b) 0.8 leading
    c) 0.6 leading
    d) 0.6 lagging

14. The short coming of repulsion motor is _____.
    a) Variation of speed with load
    b) Low power factor
    c) Tendency to spark at brushes
    d) All of these

15. A ceiling fan of 1400 mm sweep will have motor rating of _____.
    a) 10 to 15 watts
    b) 50 to 70 watts
    c) 120 to 180 watts
    (d) 250 to 500 watts

16. Which of the following applications would need the smallest size of motor?
    a) Domestic motor
    b) Electric clock
    c) Table fan
    d) Sewing machine

17. All single phase AC motors are designed to operate usually on _____.
    a) 220 V only
    b) 220 V + 10V
    c) 220 ± 0V
    d) $220 \pm 10\%$ volts

18. In a hysteresis motor, the position of shaded pole with respect to main pole determines: -
    a) Speed of motor
    b) Direction of rotation
    c) Hysteresis loss
    d) No load rpm

19. Which motor would you select for vacuum cleaners?
    a) Universal motor
    b) Repulsion motor
    c) Hysteresis motor
    d) Reluctance motor

20. The advantage of salient poles in an alternator is _____.
    a) Reduce noise
    b) Reduced windage loss
    c) Adoptability to low and medium speed operation
    d) Reduce bearings loads and noise

21. The advantage of providing damper winding in alternators is _____.
    a) Elimination of harmonic effects
    b) Provide a low resistance path for the currents due to unbalancing of voltage
    c) Oscillations are provided when two alternators operate in parallel
    d) All of the above

22. A three phase alternator has a phase sequence of RYB for its three output voltages, for clockwise rotation. Now if the alternator is rotated anticlockwise, the phase sequence will be _____.
    a) RYB
    b) RBY
    c) BYR
    d) None of these

23. 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

24. The power factor of an alternator depends on _____.
    a) Load   b) Speed of rotor   c) Core losses   d) Armature losses

25. 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

26. A winding is having number of slots is greater than number of poles, then this winding is called _____.
    a) Concentrated winding   b) Distributed winding
    c) Full pitch winding   d) Integrated slot winding

27. Synchronous motor can operate at _____.
    a) Lagging power factor only   b) Leading power factor only
    c) Unity power factor only   d) Lagging, leading and unity power factor only

28. The damping winding in a synchronous motor is generally used _____.
    a) To provide starting torque only
    b) To reduce noise level
    c) To reduce eddy currents
    d) To prevent hunting and provide the starting torque

29. The back emf set up in the stator of a synchronous motor will depend on _____.
    a) Rotor speed only
    b) Rotor excitation only
    c) Rotor excitation and rotor speed
    d) Coupling angle, rotor speed and excitation

30. In a synchronous motor, damper winding is provided to _____.
    a) Stabilize rotor motion   b) Suppress rotor oscillations
    c) Develop necessary starting torque   d) Both (b) & (c)

31. When load on a synchronous motor is increased its armature current is increased provided it is _____.
    a) Normally excited   b) Over excited   c) Under excited   d) All of these

32. An Auto-transformer (which has only one winding) may be used as a _____?
    a) Step-up transformer   b) Step-down transformer
    c) Both (a) & (b)   d) None of these

33. In an Auto Transformer, the primary and secondary are _____ coupled.
   a) Only magnetically
   b) Only electrically
   c) Magnetically as well as electrically
   d) None of these

34. The nominal ratio for a current transformer is given by _____.
   a) (rated primary winding current)/ (rated secondary winding current)
   b) (number of turns in the primary winding)/ (number of turns in the secondary winding)
   c) (number of turns in the secondary winding)/ (number of turns in the primary winding)
   d) (rated secondary winding current)/ (rated primary winding current)

35. The transformer ratio of the transformer depends upon the _____.
   a) Exciting current
   b) Secondary current
   c) Power factor of secondary circuit
   d) All of these

36. Radiant efficiency of the luminous source depends on _____.
   a) Shape of the source
   b) Temperature of the source
   c) Wavelength of light rays
   d) All of these

37. Light waves travel with a velocity of _____.
   a) 3×10^{10} cm/s
   b) 3×10^{12} cm/s
   c) 3×10^{15} cm/s
   d) 3×10^{18} cm/s

38. Carbon arc lamps are commonly used in _____.
   a) Domestic lighting
   b) Street lighting
   c) Cinema projectors
   d) Photography

39. The unit of solid angle is _____.
   a) Solid angle
   b) Radian
   c) Sternadian
   d) Candela

40. Candela is the unit of _____.
   a) Luminous flux
   b) Luminous intensity
   c) Wavelength
   d) None of these

41. The unit of luminous flux is _____.
   a) Steradian
   b) Candela
   c) Lumen
   d) Lux

42. Luminous efficiency of a fluorescent tube is _____.
   a) 5 – 10 lumens/ watt
   b) 15 – 20 lumens/ watt
   c) 30 – 40 lumens/ watt
   d) 60 – 65 lumens/ watt

43. One lumen per square meter is the same as_____.
   a) One lux
   b) One candela
   c) One foot candle
   d) One lumen meter

44. The frequency of flickers in a fluorescent lamp at 220V, 50 Hz supply will be _____.
   a) 25 per second
   b) 50 per second
   c) 100 per second
   d) 220 per second

45. One that is based on forward biased PN junction is _____.
   a) Photo diode
   b) LED
   c) Photo voltaic cell
   d) Both (a) & (b)

46. Photo diode is used for detection of _____.
   a) Visible light   b) Invisible light   c) No light   d) Both (a) & (b)

47. Color of light emitted by LED depends on _____.
   a) Its forward bias   b) Its reverse bias
   c) Forward current   d) Semiconductor material

48. The earth wire should not be thinner than a _____.
   a) 20 SWG wire   b) 16 SWG wire   c) 10 SWG wire   d) 8 SWG wire

49. In automobile the sound is produced by horn due to _____.
   a) Magnetostriction   b) Vibrating diaphragm
   c) Moving coil   d) Oscillating coil

50. In a constant power type load _____.
   a) Torque is proportional to speed   b) Torque is proportional to square of speed
   c) Torque is inversely proportional of speed   d) Torque is independent of speed

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