

PAPER – I
ELECTRICIAN
(THEORY)
SEMESTER – IV

TIME: 3 HRS.

MARKS: 150

Note: Attempt all the 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. The frame of an induction motor is usually made of –
 - a) Silicon steel
 - b) Cast iron
 - c) Aluminium
 - d) Copper

2. Slip rings are usually made of –
 - a) Copper
 - b) Carbon
 - c) Phosphor bronze
 - d) Aluminium

3. In a hydro-electric plant a conduct system for taking water from the intake works to the turbine is known as –
 - a) Dam
 - b) Reservoir
 - c) Penstock
 - d) Surge tank

4. The shaft of an induction motor is made from –
 - a) High speed steel
 - b) Stainless steel
 - c) Carbon steel
 - d) Cast iron

5. In a induction motor, no-load slip is generally –
 - a) Less than 1 percent
 - b) 5 percent
 - c) 2percent
 - d) 4 percent

6. The most common type of ac motor is the –
 - a) Single-phase induction motor
 - b) Two-phase induction motor
 - c) Three-phase induction motor
 - d) Two-phase squirrel-cage motor

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7. A single-phase induction motor –
- a) Is self-starting
 - b) Operates at a fixed speed
 - c) Is less reliable than a three-phase synchronous motor
 - d) None of the above
8. If a slot consists of one coil side then the winding is called
- a) Double layer winding
 - b) Full pitch winding
 - c) Single layer winding
 - d) Short pitch winding
9. A capacitor start, capacitor run single phase induction motor is basically a
- a) AC series motor
 - b) DC series motor
 - c) 2 phase induction motor
 - d) 3 phase induction motor
10. The starting torque of a capacitor start motor is –
- a) Zero
 - b) Low
 - c) Same as rated torque
 - d) More than rated torque
11. The starting capacitor of a single phase motor is –
- a) Electrolytic capacitor
 - b) Ceramic capacitor
 - c) Paper capacitor
 - d) None of the above.
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
 - b) 250 to 500 watts.

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- 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 Which of the following is not a bio-mass source?
a) Gobar gas
b) Coal
c) Wood
d) Nuclear energy
18. The source of energy of the sun is _____.
a) Nuclear fission
b) Chemical reaction
c) Nuclear fusion
d) Photoelectric effect
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 bearing loads and noise.
21. Major share of power generated in India is through which means-
a) Hydroelectric power plants
b) Nuclear power plants
c) Thermal power plants
d) Gas turbine power plants
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.

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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 (a) & (c)

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31. Advantage of hydro-electric power station is –
 a) Low operating cost
 b) Free from pollution problems
 c) No fuel transportation problems
 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 the above
33. In an Auto Transformer, The Primary and Secondary are Coupled.
 a) Only Magnetically
 b) Only Electrically
 c) Magnetically as well as Electrical
 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) Steradian
 d) Candela

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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 220 V, 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

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49. In automobiles 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 to speed
- d) Torque is independent of speed.
