DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

23-0005-AB

Time Allowed: One hour

TEST BOOKLET
PAPER – II
ELECTRICIAN

Maximum Marks: 50

INSTRUCTIONS TO CANDIDATES

Read the instructions carefully before answering the questions: -

1. This Test Booklet consists of 08 (eight) pages and has 50 (fifty) questions.
2. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET *DOES NOT* HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
3. Please note that it is the candidate's responsibility to fill in the Roll Number and other required details carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/discrepancy will render the OMR Answer Sheet liable for rejection.
4. Do not write anything else on the OMR Answer Sheet except the required information. Before you proceed to mark in the OMR Answer Sheet, please ensure that you have filled in the required particulars as per given instructions.
5. Use only Black Ball Point Pen to fill the OMR Answer Sheet.
6. Each question comprises of 04 (four) responses (answers). You are required to select the response which you want to mark on the OMR Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose *ONLY ONE* response for each item.
7. After you have completed filling in all your responses on the OMR Answer Sheet and the examination has concluded, you should hand over to the Invigilator *only the OMR Answer Sheet*. You are permitted to take the Test Booklet with you.
8. Penalty for wrong answers in case of Multiple Choice based Questions:
   THERE WIL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE.
   (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.
   (ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.
   (iii) If a question is left blank. i.e., no answer is given by the candidate; there will be no penalty for that question.

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ELECTRICIAN

Choose the correct answer for the following questions: (1 x 50 = 50)

1. A Buchholz relay is used for -
   (a) Protection of a transformer against all internal faults.
   (b) Protection of a transformer against external faults
   (c) Protection of a transformer against both internal and external faults
   (d) Protection of induction motor

2. In the protection of transformer, harmonic restraint is used to guard against -
   (a) Unbalance operation
   (b) Lighting
   (c) Magnetizing inrush current
   (d) Switching over-voltage

3. The torque speed characteristic of a Repulsion motor resembles with which of the following DC motor characteristic?
   (a) Separately excited
   (b) Shunt
   (c) Series
   (d) Compound

4. An electric motor with constant output power will have a torque speed characteristic in the form of a -
   (a) Straight line through the origin
   (b) Straight line parallel to the speed axis
   (c) Circle about the origin
   (d) Rectangular hyperbola

5. Skewing is used in induction motors in order to reduce torque due to -
   (a) Time harmonics
   (b) Space harmonics
   (c) Slot harmonics
   (d) Reverse rotating fields

6. Unbalanced supply voltage given to a 3-phase delta –connection induction motor will cause-
   (a) Zero sequence currents
   (b) Less heating of the rotator
   (c) Negative sequence component current
   (d) All of the above

7. During hunting of synchronous motor -
   (a) Negative phase sequence current are generated
   (b) Harmonics are developed in the armature circuit
   (c) Damper bar develops torque
   (d) Field excitation increases

8. A synchronous generator is feeding a zero power factor (lagging) load at rated current. The armature reaction is -
   (a) Magnetizing
   (b) Demagnetizing
   (c) Cross-magnetizing
   (d) Ineffective

9. Which type of motor is most suitable for computer printer drive?
   (a) Reluctance motor
   (b) Hysteresis motor
   (c) Shaded pole motor
   (d) Stepper motor

10. In a single phase induction motor driving a fan load, the reason for having a high resistance rotor is to achieve -
   (a) Low starting torque
   (b) Quick acceleration
   (c) High efficiency
   (d) Reduced size

11. Bundled conductors are mainly used in high voltage overhead transmission line to-
   (a) Reduce transmission line losses
   (b) Increase mechanical strength of the line
   (c) Reduce corona
   (d) Decrease in capacitance

12. The concept of an electrically short, medium, and long line is primarily based on the -
   (a) Nominal voltage of the line
   (b) Physical length of the line
   (c) Wavelength of the line
   (d) Power transmitted over the line

13. Series capacitive compensation in EHV transmission lines is used to -
   (a) Reduce the line loading
   (b) Improve the stability of the system
   (c) Reduce the voltage profile
   (d) Improve the protection of the line

14. The rated voltage of a 3-phase power system is given as -
   (a) RMS phase voltage
   (b) peak phase voltage
   (c) RMS line to line voltage
   (d) line to line voltage

15. The undesirable property of an electrical insulating material is -
   (a) High dielectric strength
   (b) High relative permittivity
   (c) High thermal conductivity
   (d) High insulation resistivity

16. The use of high speed circuit breakers -
   (a) Reduce the short-circuit current
   (b) Improve system stability
   (c) Decrease system stability
   (d) Increase the short-circuit current

17. Steady state stability of a power system is the ability of the power system to-
   (a) Maintain voltage at the rated voltage level
   (b) Maintain frequency exactly at 50Hz
   (c) Maintain a spinning reserve margin at all times
   (d) Maintain synchronism

18. The load carrying capability of a long ac transmission line is-
    (a) Always limited by the conductor size
    (b) Limited by stability considerations
    (c) Reduced at low ambient temperature
    (d) Decreased by the use of bundled conductors of single conductor

19. Resistance switching is normally employed in-
    (a) All breakers
    (b) bulk oil breakers
    (c) Minimum oil breakers
    (d) air blast circuit breakers

20. Reactance relay is normally preferred for protection against-
    (a) Earth faults
    (b) Phase faults
    (c) Open-circuit fault
    (d) None of these

21. Keeping in view the cost and overall effectiveness, which of the following circuit breaker is best suited for capacitor bank switching?
    (a) Vacuum
    (b) air blast
    (c) SF6
    (d) Oil

22. A negative sequence relay is commonly used to protect
    (a) An Alternator
    (b) A transformer
    (c) A transmission line
    (d) A bus bar

23. Which of the following material is used in controlling chain reaction in a nuclear reactor?
    (a) Thorium
    (b) Heavy water
    (c) Boron
    (d) Beryllium

24. In a thermal power plant the feed water coming to the economizer is heated using-
    (a) H.P. stream
    (b) L.P. stream
    (c) Direct heat in the furnace
    (d) Flue gases

25. The insulation strength of an EHV transmission line is mainly governed by-
    (a) Load power factor
    (b) switching over-voltages
    (c) Harmonics
    (d) corona

26. The uncontrolled electronic switch employed in power electronic converters is-
    (a) Thyristor
    (b) Bipolar Junction Transistor
    (c) Diode
    (d) MOSFET

27. The Triac can be used in-
    (a) Inverter
    (b) Rectifier
    (c) Multi-quadrant chopper
    (d) AC voltage regulator

28. In a 3-phase controlled bridge rectifier with an increase of overlap angle the output dc voltage-
    (a) Decreases
    (b) Increases
    (c) Does not change
    (d) depends upon the load inductance

29. The power factor is defined as-
    (a) The ratio of apparent power to reactive power
    (b) The ratio of true power to apparent power
    (c) The ratio of true power to reactive power
    (d) The ratio of apparent power to true power

30. An ideal constant current source is connected in series with an ideal constant voltage source. The combination will be a-
    (a) Constant voltage source
    (b) Constant current source
    (c) Constant power source
    (d) None of the above

31. Capacitor stores energy in-
    (a) Magnetic field
    (b) Electric field
    (c) Electromagnetic field
    (d) Rotating magnetic field

32. The average power consumed by a network composed of an ideal inductor and a capacitor is_____.
    (a) Infinite
    (b) Zero
    (c) Depend on capacitor and inductor value
    (d) None of the above

33. During charging the specific gravity of the electrolyte of a lead-acid battery-
    (a) Increases
    (b) Decreases
    (c) Remains the same
    (d) Becomes zero

34. Which law states that: "The mass of an ion liberated at an electrode is directly proportional to the quantity of electricity"?
    (a) Newton's law
    (b) Faraday's law of Electromagnetics
    (c) Faraday's law of electrolysis
    (d) Gauss's law

35. For a given voltage four heating coils will produce maximum heat when-
(a) All are connected in parallel
(b) All are connected in series
(c) Connected with two parallel pairs in series
(d) One pair is connected in parallel with the other two in series

36. Which of the following lamp gives nearly monochromatic light?
(a) CFL
(b) sodium Vapour lamp
(c) Mercury Vapour lamp
(d) GLS lamp

37. The conductance of electrical circuit is analogous in magnetic circuit to-
(a) Flux
(b) Reluctance
(c) Permeance
(d) Relative Permeability

38..A leading power factor load on an alternator implies that the voltage regulation shall be-
(a) Positive
(b) Negative
(c) Zero
(d) Any of the Above

39. Speed of sound through a medium depends on the
(a) Wavelength of the source
(b) Constant in any medium
(c) Density of the medium
(d) Frequency of the source

40. The intrinsic impedance of free space is-
(a) 75ohm
(b) 150 ohm
(c) 377 ohm
(d) 400 ohm

41. If the flux per pole of a shunt-wound dc generator is halved, the generated EMF at constant speed-
(a) is doubled
(b) is halved
(c) Remains constant
(d) becomes three times

42. A commutator in a DC generator provides-
(a) half-wave rectification
(b) full-wave rectification
(c) half-wave controlled rectification
(d) full-wave controlled rectification

43. Flash point is the temperature at which-
(a) A mixture of transformer oil vapour and air is ignited by a spark brought close to it
(b) The pin insulator breaks down due to corona
(c) An arc restrikes after being extinguished
(d) The conductor insulator is ignited due to temperature rise

44. The standards that guide the method of calculating efficiencies are-
    (a) I2R
    (b) NEMA and IEC
    (c) NAME and ICE
    (d) NAME and I2R

45. What are the two method of electrical wiring?
    (a) CTS and TRS
    (b) Tee system and cleat system
    (c) Joint box system and loop-in-system
    (d) Capping system and casing system

46. The importance of earthing in an electrical system-
    (a) Minimizes the risk of electric shock
    (b) Electrifies the static charge
    (c) Accumulates the stray voltage
    (d) Eliminates the voltage

47. An instrument used to measure the utility frequency is-
    (a) Multimeter
    (b) Electromagnetic wattmeter
    (c) Energy meter
    (d) Tachometer

48. The two types of coaxial cables used in the entertainment system are -
    (a) Yellow strip and red stripe
    (b) Blue strip and orange strip
    (c) RG-95 and RG-9
    (d) RG-59 and RG-6

49. The synchronous speed when a stator is wound with a 3-phase winding connected to 4 poles with the supply frequency of 50Hz is-
    (a) Ns=1500 rpm
    (b) Ns=1550 rpm
    (c) Ns=1450 rpm
    (d) Ns=1400 rpm

50. The colour sequence of the colour bands of 10KΩ resistor with 5% tolerance should be:
    (a) brown, black, orange, and silver
    (b) black, brown, orange, and gold
    (c) brown, black ,orange, and gold
    (d) black, brown, red, and gold

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