

050/2022

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

Total Number of questions : 100

Time : 90 Minutes

Maximum Marks : 100

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet Alpha Code viz. A, B, C & D.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a question booklet where the Alpha Code does not match to the allotted Alpha Code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is unnumbered, please get it replaced by new question booklet with same Alpha Code.
6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so, he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same Alpha Code. This is most important.
8. A blank sheet of paper is attached to the question booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

A

DO NOT WRITE HERE

1. The property of a conductor due to which it passes electric current is called
(A) Inductance (B) Capacitance
(C) Reluctance (D) Conductance
2. Which of the following materials has negative temperature co-efficient of resistance?
(A) Gold (B) Brass
(C) Carbon (D) Manganin
3. A rheostat differs from potentiometer in the respect that it
(A) Has lower wattage ratings
(B) Has higher wattage ratings
(C) Has large number of tappings
(D) Has large number of turns
4. 1 Coulomb charge equals to the charge on
(A) 6.24×10^{18} electrons (B) 6.24×10^{19} electrons
(C) 6.24×10^{17} electrons (D) 6.24×10^{12} electrons
5. An instrument which detects electric current flow is known as
(A) Frequency meter (B) Odometer
(C) Galvanometer (D) Rheostat
6. The resistance of a conductor varies inversely as
(A) Length (B) Resistivity
(C) Diameter (D) Temperature
7. Varistors act like
(A) Linear resistors
(B) Carbon resistors
(C) Resistor with zero temperature co-efficient
(D) Non-linear resistors
8. Melting temperature of electrician's solder is
(A) 300°C (B) 145°C
(C) 280°C (D) 185°C

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9. Which of the following materials is good conductor of electricity?
(A) Gold (B) Iron
(C) Aluminium (D) Copper
10. Maximum current carrying capacity of 1.5 mm² aluminium wire
(A) 13A (B) 10A
(C) 8A (D) 12A
11. Kirchhoff's law is applicable to
(A) AC circuits only (B) DC circuits only
(C) Passive network only (D) Both AC and DC circuits
12. The circuit whose properties are same in either direction is known as
(A) Unilateral circuits (B) Irreversible circuit
(C) Bilateral circuit (D) Short circuit
13. The capacity of a storage cell is expressed in
(A) Ampere (B) Farad
(C) Ampere hour (D) None of these
14. Which of the following acts as depolarizer in Leclanche cell?
(A) NH₄Cl (B) Mn₂O₃
(C) MnO₂ (D) KOH
15. Why Constantan wire is used for making standard resistors?
(A) High resistivity
(B) Low resistivity
(C) Low temperature co-efficient of resistance
(D) High temperature co-efficient of resistance
16. The capacity of a storage cell is 2.5 Ah. What is the maximum current that can supply for half hour?
(A) 0.5 A (B) 1.8 A
(C) 2.5 A (D) 5.0 A
17. Sedimentation in lead acid batteries occurs due to
(A) Overcharging at high rate (B) Slow charging at low rate
(C) Over discharging (D) Non-utilization for longer periods

18. The capacitance of a capacitor is not affected by
(A) Thickness of the plates (B) Distance between plates
(C) Area of plates (D) None of these
19. According to Lenz's law the direction of induced current always
(A) Aids the cause (B) Opposes the cause
(C) Remains same (D) Equal to the cause
20. Electrochemical equivalent is usually expressed in
(A) Milligrams/Coulomb (B) Milligrams/Kw
(C) Milligrams/Volt (D) Milligrams/kVAr
21. Magnets are made of low retentivity but high permeability materials are called
(A) Permanent magnets (B) Weak magnets
(C) Electromagnets (D) Natural magnets
22. The diamagnetic material has relative permeability
(A) Less than 1
(B) More than 1
(C) More than 100
(D) Equal to ferromagnetic material
23. The unit of Magnetomotive force is
(A) Ampere (B) Volt
(C) Ampere turns/metres (D) Tesla
24. Working principle of auto transformer is
(A) Conduction (B) Induction
(C) Both induction and conduction (D) Admittance
25. Magnetic field exists around
(A) Iron (B) Copper
(C) Aluminium (D) Moving charges

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26. Fleming's left hand rule is used to find
(A) Polarity of magnetic pole
(B) Direction of force on a current carrying conductor in a magnetic field
(C) Direction of magnetic field due to current carrying conductor
(D) Direction of induced emf in solenoid
27. Susceptibility is positive for
(A) Ferromagnetic materials
(B) Diamagnetic materials
(C) Paramagnetic materials
(D) None of these
28. The unit of capacitance is
(A) Volts/Coulombs
(B) Coulombs/Volt
(C) Ohm-metre
(D) None of these
29. Internal resistance of a cell is due to
(A) Electrode resistance
(B) Resistance of electrolyte
(C) Surface contact resistance between electrodes and electrolyte
(D) All of the above
30. When two resistors are connected in series they have
(A) Same voltage across them
(B) Same resistance value
(C) Different resistance value
(D) Same current passing through them
31. Skin effect occurs when a conductor carries current at _____ frequencies
(A) High
(B) Low
(C) Very low
(D) Medium
32. The pf of the following circuit will be unity
(A) Resistive circuit
(B) Inductive circuit
(C) Capacitive circuit
(D) Both (A) and (C)

33. Form factor for a sine wave is
(A) 1.414 (B) 1.11
(C) 0.637 (D) 0.707
34. In a series RLC circuit on resonance condition
(A) $V_R = V$ (B) $Z = R/2$
(C) $V_L = 0$ (D) $X_L = X_C$
35. The load on each sub-circuit shall be restricted to
(A) 700 watts (B) 800 watts
(C) 900 watts (D) 3000 watts
36. The length of the rod and pipe electrodes used for earthing shall not be less than
(A) 1 m (B) 2.5 m
(C) 5 m (D) 6 m
37. During continuity test, dead short in an installation is indicated by megger
(A) zero ohms (B) 100 megohms
(C) 1 megohms (D) infinity
38. The output rating of an alternator is expressed in
(A) KW (B) KVA
(C) HP (D) KVAR
39. Batten wiring is recommended for
(A) Temporary (B) Permanent
(C) Industrial (D) Power
40. The voltage wave form produced by alternator should be
(A) Pulse wave
(B) Sine wave
(C) Triangular wave
(D) Saw tooth wave
41. In DC machines, mechanical losses are primarily function of
(A) speed
(B) voltage
(C) current
(D) none of the above

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42. Armature of a DC machine is made of
(A) conducting material (B) insulating material
(C) non-ferrous material (D) silicon steel
43. Which DC motor has got maximum self loading property?
(A) shunt motor
(B) series motor
(C) differentially compounded motor
(D) cumulatively compounded motor
44. When a DC series motor is connected to an AC supply, then
(A) It will stop
(B) It will run without any trouble
(C) It may burn out
(D) It will run with less efficiency and high spark at commutator
45. For a 4 pole machine wave winding is impossible with armature conductors of
(A) 34 (B) 32
(C) 30 (D) 38
46. Where is field winding mounted in a DC machine?
(A) Stator
(B) Rotor
(C) Absent
(D) Anywhere on stator or rotor
47. In normal DC machines operating at full-load conditions, the most powerful electromagnet is
(A) Field winding
(B) Interpole winding
(C) Interpole and compensating winding together
(D) Armature winding
48. When an electric train is moving down a hill, the DC motor will operate as
(A) DC series motor
(B) DC series generator
(C) DC shunt motor
(D) DC shunt generator

49. Which of the following is not the function of pole shoe in DC motor?
(A) To reduce eddy current loss (B) To reduce reluctance
(C) To spread out flux (D) To support field coil
50. In DC generators, the brushes on commutator remain in contact with conductors which
(A) lie under south pole
(B) lie under north pole
(C) lie under interpolar region
(D) are farthest from the poles
51. Insertion of resistance in the rotor of an induction motor
(A) changes the magnitude of maximum torque developed
(B) changes the speed at which maximum torque is developed
(C) changes both magnitude of a maximum torque developed and speed at which it occurs
(D) nothing as above happens
52. Torque developed by a single phase induction motor at starting is
(A) uniform (B) pulsating
(C) none of the two (D) nil
53. An induction motor is identical to
(A) D.C. compound motor
(B) D.C. series motor
(C) Synchronous motor
(D) Asynchronous motor
54. The efficiency of an induction motor can be expected to be nearly
(A) 60 to 90% (B) 80 to 90%
(C) 92 to 95% (D) 65%
55. The cause of crawling in the induction motor is
(A) Low voltage supply
(B) High loads
(C) Harmonics developed in the motor
(D) Improper design of the machine

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56. The starting capacitor of a single phase motor is
(A) Electrolytic capacitor (B) Ceramic capacitor
(C) Paper capacitor (D) None of these
57. In cylindrical rotor _____ portion of the rotor is wound.
(A) one-third (B) two-third
(C) one-half (D) whole
58. In the circle diagram of an induction motor the diameter of circle represents the
(A) rotor current (B) line voltage
(C) operating torque (D) maximum torque
59. In an induction motor, rotor slots are usually not quite parallel to the shaft but are given a slight skew
(A) To reduce the magnetic hum
(B) To reduce the locking tendency of the rotor
(C) Both (A) and (B) above
(D) To increase the speed of the motor
60. For an induction motor, synchronous wattage means
(A) Stator input in watts
(B) Rotor output in watts
(C) Rotor input in watts
(D) Shaft output in watts
61. Which of the following places is not associated with nuclear power plants in India?
(A) Narora (B) Tarapur
(C) Kota (D) Bangalore
62. Equipment used for pulverizing the coal is known as
(A) Ball mill (B) Hopper
(C) Burner (D) Stoker
63. The largest source of electricity in India is
(A) Tidal power
(B) Hydroelectric power
(C) Nuclear power
(D) Thermal power

64. In Francis turbine runner, the number of blades is usually of the order of
(A) 3-6 (B) 8-10
(C) 16-24 (D) 30-42
65. Water hammer occurs in
(A) surge tank (B) penstock
(C) turbine casing (D) draft tube
66. The modern steam turbines are
(A) impulse turbines (B) reaction turbines
(C) impulse-reaction turbines (D) none of the above
67. Usually, the generated voltage in generating stations is
(A) 33 KV (B) 11 KV
(C) 33 KV (D) 66 KV
68. The most economical power factor for a consumer is
(A) 0.9 lagging (B) 0.9 leading
(C) 0.5 lagging (D) 0.5 leading
69. Load factor of a power station is generally
(A) equal to unity
(B) less than unity
(C) more than unity
(D) equal to zero diversity factor always
70. In thermal power plant, turbine is placed
(A) before boiler
(B) in between boiler and generator
(C) after generator
(D) any of the above
71. The usual spans with RCC poles are
(A) 30-50 metres (B) 20-30 metres
(C) 80-100 metres (D) 150-200 metres
72. High voltage transmission lines use
(A) suspension insulators (B) pin insulators
(C) both (A) and (B) (D) none of the above

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73. Relays used in long transmission lines is
(A) Impedance relay (B) Mho's relay
(C) Reactance relay (D) None of the above
74. The material commonly used for insulation in high voltage cables is
(A) paper (B) lead
(C) PVC (D) rubber
75. 66 KV is suitable for transmission of power over
(A) 200 km (B) 120 km
(C) 60 km (D) 30 km
76. Bundled conductors in EHV transmission system provide
(A) increased capacitance
(B) reduced capacitance
(C) increased inductance
(D) increased voltage gradient
77. Current flow through the neutral of three phase 4 wire cable is
(A) equal to current in phase wires
(B) equal to the sum of currents in phase wires
(C) less than current in the phase wire
(D) more than the current in the phase wire
78. Skin effect results in
(A) reduced effective resistance but increased effective internal reactance of the conductor
(B) increased effective resistance but reduced effective internal reactance of the conductor
(C) reduced effective resistance as well as effective internal reactance
(D) increased effective resistance as well as effective internal reactance

79. The most suitable practical value of primary distribution is
(A) 66 kV (B) 6.6 kV
(C) 230 V/400 V (D) 22 kV
80. Which among the following properties has got a higher for aluminium in comparison to that of copper?
(A) Electrical resistivity (B) Melting point
(C) Thermal conductivity (D) Specific gravity
81. The force producing movement of the pointer in an indicating instrument is called
(A) Controlling force (B) Deflecting force
(C) Damping force (D) Distracting force
82. An instrument using gravity control will read correctly if used in
(A) the vertical position only
(B) an inclined position only
(C) the horizontal position only
(D) any position
83. The deflecting torque of moving iron attraction type of instrument is _____
(A) directly proportional to the current
(B) inversely proportional to the current
(C) directly proportional to the square of the current
(D) inversely proportional to the square of the current
84. Air is removed from incandescent lamp is to:
(A) prevent oxidation
(B) minimise heat loss
(C) (A) and (B)
(D) none of these
85. Light energy radiated per second from a light source is called
(A) Illumination (B) Luminance
(C) Luminous intensity (D) Luminous flux
86. A 60 w lamp given a luminous flux of 1500 lumen its efficiency is
(A) 1500 lumen/watt (B) 25 lumen/watt
(C) 2.5 lumen/watt (D) 250 lumen/watt

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87. The no load current of a transformer in terms of the full load current is usually
(A) 1 to 3% (B) 5 to 9%
(C) 9 to 12% (D) 12 to 20%
88. The purpose of oil in the transformer is to
(A) Lubricate (B) Insulate and cool
(C) Lubricate and cool (D) Cool
89. Buchholz relay is a protective device used in
(A) 3 phase motor (B) Single phase motor
(C) Auto transformer (D) Power transformer
90. Dynamometer type wattmeter can be used on
(A) Both AC and DC (B) DC only
(C) AC only (D) None of these
91. The specification of ceiling fan is
(A) Current (B) Voltage
(C) Sweep (D) Power
92. The gas filled in a sodium vapour lamp is
(A) Neon (B) Helium
(C) Argon (D) Hydrogen
93. Which element is used as a semiconductor material?
(A) Copper (B) Plastic
(C) Brass (D) Silicon
94. The main characteristic of any diode is
(A) it lets current flow in only one direction
(B) most current flow when it is reverse biased
(C) it lets current flow from cathode to anode
(D) no current flow when it is forward biased
95. NPN transistors are preferred to PNP transistor for
(A) easy use in +ve supply rail
(B) higher switching speed
(C) a wide range of operating temperature
(D) the reasons mentioned in (A) and (B) above

96. The number of depletion layers in a transistor is
(A) Three (B) Two
(C) One (D) Four
97. The material used in an oven as heating element is
(A) Copper (B) Brass
(C) Eureka (D) Nichrome
98. Which motor is generally used for domestic washing machine?
(A) split phase motor (B) 3 phase induction motor
(C) capacitor start motor (D) reluctance motor
99. An Ohm meter is used for measuring
(A) resistance (B) insulation resistance
(C) current (D) potential difference
100. The rotating speed of the magneto type megger is
(A) 180 rpm (B) 150 rpm
(C) 160 rpm (D) 120 rpm
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SPACE FOR ROUGH WORK

