

030/2020

Question Booklet Alpha Code



	Question Booklet Sl. No.
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Total Number of Questions : 100

Time : 75 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 un-numbered, 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/her 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.

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A

1. The fusing factor of HRC fuse will be
 A) 0.707 B) 0.637 C) 1.21 D) 1.1
2. Resistance of 230 v 100 w incandescent lamp is
 A) 2.3 ohm B) 529 ohm C) 4.3 ohm D) 625 ohm
3. Temperature coefficient of resistance is measured in
 A) $\text{Ohm}/^{\circ}\text{C}$ B) $\text{Ohm}^2/0^{\circ}\text{C}$
 C) $\text{Ohm} -^{\circ}\text{C}$ D) $\text{Ohm}^2 -0^{\circ}\text{C}$
4. Example of paramagnetic material is
 A) Nickel B) Graphite
 C) Air D) Steel
5. Working voltage of megger for testing domestic installations are
 A) 200 v B) 230 v C) 500 v D) 440 v
6. The power factor of purely resistive circuit is
 A) Unity B) Zero C) Lagging D) Leading
7. The capacitive reactance is measured in
 A) Farad B) Ohm
 C) Ohm/Farad D) Farad/ohm
8. Permalloy is an alloy containing
 A) Nickel and iron B) Tin and lead
 C) Nickel and chromium D) Nickel and copper
9. For a sinusoidal current crest factor is
 A) 1.11 B) 1.414 C) 4.44 D) 0.637
10. The specific gravity of electrolyte in a fully charged lead acid battery is
 A) 1.285 B) 1.100 C) 1.175 D) 2.585
11. The composition of tin and lead used in electrician solder are
 A) 50%, 50% B) 60%, 40% C) 65%, 35% D) 90%, 10%

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12. The material used as negative electrode in lithium cell is
A) Lithium B) Carbon C) Zinc D) Graphite
13. The reciprocal of frequency is known as
A) Time period B) Amplitude
C) Time constant D) Reactance
14. The number of electrons in an aluminium atom is
A) 13 B) 18 C) 29 D) 43
15. The capacity of a lead acid battery is expressed in
A) Watt hour B) Ampere hour
C) Volt-ampere D) Kilo watt hour
16. The unit of permeability is
A) Ampere-turns B) Weber/m²
C) No unit D) Tesla
17. Relative permittivity of vacuum is
A) 8.854 B) 8.854×10^{-12} C) Unity D) Zero
18. The ohmmeter reading for a shorted capacitor is
A) Zero B) Infinity
C) Few mega ohms D) Few kilo ohms
19. The equivalent of one picofarad is
A) $10^{12}F$ B) $1/10^{12}$ C) $10^{-9}F$ D) $1/10^6 F$
20. A parallel circuit is used as divider for
A) Conductance B) Voltage
C) Power D) Current
21. The electrical instrument used to measure current is
A) Galvanometer B) Ammeter
C) Potentiometer D) Voltmeter
22. The maximum number of lighting points that can be connected in a circuit is
A) 5 B) 10 C) 8 D) 12

A

23. One B.O.T. unit is equal to
 A) 746 w B) 735 w
 C) 1000 wh D) 3000 wh
24. The minimum distance between two plates in plate earthing which are parallel should be
 A) 8 m B) 5 m C) 12 m D) 3 m
25. AC single phase energy meter record the energy in the unit of
 A) Kilo volt ampere B) Kilo watt hour
 C) Kilo watt D) Volt-ampere
26. The unit of reluctance is
 A) Ampere-turns B) Ampere turns/Weber
 C) Ampere turns/meter D) Ohm-meter
27. A material that is slightly repelled by a magnet is called
 A) Magnetic B) Paramagnetic
 C) Diamagnetic D) Ferromagnetic
28. The phases angle between voltage and current in a pure inductive circuit is
 A) 0 B) 90 C) 60 D) 180
29. Two capacitors of 5 Micro farad each are connected in parallel their total effective capacitance is
 A) 10 micro farad B) 5 micro farad
 C) 2.5 micro farad D) 25 micro farad
30. Aluminium becomes super conductor at
 A) 0°C B) 234.5°C C) -272.15C D) -27.215°C
31. Energy stored in an inductance is given by
 A) $\frac{1}{2}LI^2$ B) LI^2 C) $2LI^2$ D) ZIt
32. The expansion of XLPE cable is
 A) X- Line Power Electrical cable
 B) Cross-line polythene enameled cable
 C) Cross-linked polyethylene cable
 D) X-layers of polyethylene cable

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33. Name the non-metal will conduct electricity.
A) Fiber
B) Porelain
C) Graphite
D) PVC
34. A depolarizer in a dry cell is
A) Zinc chloride
B) Carbon powder
C) Manganese dioxide
D) Ammonium chloride
35. The material has a negative temperature coefficient of resistance is
A) Brass
B) Copper
C) Carbon
D) Aluminium
36. Electrochemical equivalent of aluminium is
A) 0.0936
B) 0.0104
C) 1.118
D) 1.304
37. Three capacitors each of 100 Micro farad are connected in series across 100 v supply there equivalent capacitance is
A) 66.66 Micro farad
B) 300 Micro farad
C) 33.33 Micro farad
D) 100 Micro farad
38. Which colour wire is recommended for earth connection as per ISI code ?
A) Red
B) Green
C) Black
D) Blue
39. The maximum value of a sine wave AC voltage is 10 v, its rms value is
A) 0.637
B) 0.707
C) 7.070
D) 1.414
40. The direction of flow of lines of force around a bar magnet is
A) Out of the South Pole into the North Pole
B) Out of the North Pole into the South Pole
C) Equally out of either pole into the other
D) From one magnet to another only

41. From the following power plants which one has the least operating cost ?
A) Hydro-electric
B) Solar
C) Thermal
D) Nuclear
42. In DC shunt motor what is the relation between speed, flux and back EMF ?
A) $N \propto \frac{\phi}{E_b}$
B) $\phi \propto NE_b$
C) $N \propto \frac{E_b}{\phi}$
D) $E_b \propto \phi N$
43. The maximum permissible voltage drop in a 240 V network is 30%. What is the minimum acceptable voltage in any point of the network ?
A) 225.1 V
B) 232.8 V
C) 227 V
D) 220 V
44. Which one of the following three phase motor is not self-starting ?
A) Synchronous motor
B) Squirrel cage induction motor
C) Wound rotor motor
D) Double cage motor
45. The fuel used in nuclear generation power plants is
A) Methane
B) Crude oil
C) Liquefied hydrogen
D) Isotopes of uranium
46. Removing the load from a DC series motor while working, what will happen to its speed ?
A) Will increase
B) Will become zero
C) Will decrease
D) Will remain constant
47. The width of a trench for laying a single cable should be a minimum of _____ cm.
A) 33 cm
B) 32 cm
C) 30 cm
D) 35 cm
48. The fractional slip (S) of an induction motor can be found by the formula
A) $S = \frac{N_s - N_r}{N_s}$
B) $S = \frac{N_s - N_r}{N_r}$
C) $S = \frac{N_r - N_s}{N_r}$
D) $S = \frac{N_r}{N_s}$
49. The sun makes energy in its inner core by a process called
A) Nuclear fission
B) Chemical reaction
C) Nuclear fusion
D) Photoelectric effect

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50. In S.I. System what will be the unit of Torque of DC motor ?
- A) Newton-meter
 - B) Joule
 - C) Newton-centimeter
 - D) Kilogram-meter
51. What is the purpose of bedding in an underground cable ?
- A) To increase the conductivity of the cable
 - B) To protect the metallic sheath from mechanical injury from armoring
 - C) To hold the insulators on which conductors are fastened
 - D) To avoid moisture entering into the cable
52. Calculate the synchronous speed (N) of 5 HP, 8 pole/415 V/50 Hz, three phase squirrel cage induction motor
- A) 960 rpm
 - B) 2750 rpm
 - C) 750 rpm
 - D) 1000 rpm
53. In a steam power plant _____ is used to heat the feed water from the flue gas.
- A) Super heater
 - B) Economizer
 - C) Air pre heater
 - D) Boiler
54. While conducting a no-load test in a DC series motor, what consequences will occur ?
- A) There will be a decreased field current with the result motor speed will be low
 - B) The motor will reach such a high speed that the centrifugal force may destroy the motor winding
 - C) The armature current will increase abnormally and the fuse will blow
 - D) The motor will come to rest immediately due to low field current
55. Epoxy cable joint is used
- A) Where heating of the cable is not permitted
 - B) In temporary joint
 - C) In H.T. cable joints
 - D) In 'T' Joints only

56. The starter used for slip ring induction motor is
- A) D.O.L. starter
 - B) Rotor resistance starter
 - C) Star-delta starter
 - D) Automatic star-delta starter
57. In bio gas mixture _____ is the main constituent.
- A) Methane
 - B) Nitrogen
 - C) Hydrogen
 - D) Carbon-di-oxide
58. Regenerative or Hopkinson's test may be conducted on DC machines on _____ load.
- A) No-load
 - B) Full-load
 - C) Part-load
 - D) Over-load
59. Which of the following DC distribution system is the simplest and lowest in first cost ?
- A) Radial system
 - B) Ring system
 - C) Inter connected system
 - D) Tree system
60. Which of the following speed is called the actual speed in a three phase induction motor ?
- A) Rotor speed
 - B) Starter speed
 - C) Speed of the rotating magnetic field
 - D) Speed of the flux produced in the rotor
61. Which one of the following is not a non-conventional (renewable) source of energy ?
- A) Tidal energy
 - B) Geothermal energy
 - C) Nuclear energy
 - D) Wind energy

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62. During rheostat breaking of DC series motors
- A) Motor is reversed in direction
 - B) Motor is run as a generator
 - C) Motor is run at high speed
 - D) Motor is run at reduced speed
63. ACSR conductors could be joined by using
- A) Oval shaped sleeves
 - B) Straight sleeve and nut connector
 - C) Compression sleeves
 - D) Universal P.G. clamp
64. How is the slip ring induction motor connected to the main ?
- A) Supply to stator winding, rotor winding shorted through resistance
 - B) Supply to rotor winding, stator winding shorted
 - C) Rated voltage to stator winding, reduced voltage to rotor
 - D) Supply to both windings while starting, rotor winding disconnected after starting
65. Which one is used to generate power in geothermal station ?
- A) Heat in the atmosphere
 - B) Heat inside the earth
 - C) Heat in the ionosphere
 - D) Heat of the sun
66. The no-volt coil is used as a protective device in a motor starter. What is its main function ?
- A) Prevent opening the supply circuit when fluctuation occurs in the power system
 - B) Open the supply circuit on failure or reduction of voltage, and automatically reclose it on return of normal voltage
 - C) Open supply circuit upon failure or reduction of voltage and keep open until manually closed
 - D) Control motor voltage and keep it at a safe value
67. Non-conductor of an overhead line, including service lines erected across a street shall at any part there of, be at a height less than _____ meters for high voltage lines.
- A) 5.486
 - B) 6.096
 - C) 5.791
 - D) 5.75

A

68. In the manual star-delta starter, the stop button connection is in series with the
 A) Over-load relay contacts
 B) No-volt coil
 C) No-volt coil and load relay contacts
 D) No-volt coil and start button
69. Equipment used for pulverizing the coal is known as
 A) Hopper
 B) Burner
 C) Ball mill
 D) Stoker
70. _____ is the formula for dynamically induced EMF.
 A) $BL \sin\theta$ volts
 B) $BLV \cos\theta$ volts
 C) $BLV \sin\theta$ volts
 D) BLV volts
71. The depth of pole below the ground level on a normal soil should be
 A) $\frac{1}{4}$ th of the height of the pole
 B) $\frac{1}{5}$ th of the height of the pole
 C) $\frac{1}{6}$ th of the height of the pole
 D) $\frac{1}{8}$ th of the height of the pole
72. When the three phase squirrel cage induction motor is started by star-delta starter, the starting current is reduced to
 A) $\sqrt{3}$ times
 B) $\frac{1}{\sqrt{3}}$ times
 C) 3 times
 D) $\frac{1}{3}$ times
73. Which of the following is conventional source of energy ?
 A) Coal
 B) Solar
 C) Wind
 D) Small-hydro
74. The terminal markings of a separately excited DC generator as per Indian standard is
 A) A1, A2, E1, E2
 B) A1, A2, F1, F2
 C) Sh1, Sh2, A1, A2
 D) D1, D2, A1, A2

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75. _____ is the factor which least affects the sag of a transmission line.
- A) Weight of the conductor
 - B) Current through the conductor
 - C) Atmospheric temperature
 - D) Ice deposition on the conductor
76. What is the purpose to conduct blocked rotor test in a three phase induction motor ?
- A) To determine the full load copper loss
 - B) To determine the mechanical and iron loss
 - C) To determine the total equivalent resistance of the rotor winding
 - D) To determine the torque of the induction motor
77. A solar module is made up of large number of
- A) Solar array
 - B) Solar cells
 - C) Solar panels
 - D) PV system
78. Which liquid do you use for cleaning the commutator of a DC generator ?
- A) Carbon tetra chloride
 - B) Kerosene
 - C) Iodine
 - D) Petrol mixed with oil
79. The depth of laying underground cable from the ground surface for 11 KV HT cable is
- A) 0.7 m
 - B) 0.9 m
 - C) 1.1 m
 - D) 0.1 m
80. If two phases of the supply are interchanged, what will happen to a three phase induction motor ?
- A) The motor rotates in reverse direction
 - B) The motor windings will burn
 - C) The motor will run slowly
 - D) The motor will not run

81. Which force is required to move the pointer from zero position in an indicating instrument ?
- A) Controlling force
 - B) Deflecting force
 - C) Air friction damping
 - D) Eddy current damping
82. Which source of measuring error is caused by the effect of magnetic fields ?
- A) Device error
 - B) Human error
 - C) Influence error
 - D) Switching error
83. Which type of instrument is used with air friction damping ?
- A) Moving coil instrument
 - B) Moving iron instrument
 - C) Induction type instrument
 - D) Dynamo meter type instrument
84. Why damping force is required in a moving coil instrument ?
- A) Makes the needle movement faster
 - B) Helps the deflecting force to act fast
 - C) Brings the needle to its zero position
 - D) Arrests the needle to its zero position
85. What is the typical efficiency range of a transformer ?
- A) 85 to 90%
 - B) 80 to 85%
 - C) 92 to 99%
 - D) 90 to 95%
86. What is the relationship between primary and secondary currents of a transformer ?
- A) Comparison of primary voltage and secondary voltage
 - B) Comparison of the primary and secondary ampere turns
 - C) Comparison of the primary supply frequency and secondary supply frequency
 - D) Comparison of input power and output power

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87. What is the secondary induced EMF in a transformer ?
- A) $E_p = (4.44 \times f \times N_s \times \phi_m)$ Volts
 - B) $E_s = (4.44 \times f \times N_s \times \phi_m)$ Volts
 - C) $E_s = (4.44 \times f \times N_p \times \phi_m)$ Volts
 - D) $E_p = (4.44 \times f \times N_p \times \phi_m)$ Volts
88. What is the working principle of autotransformer ?
- A) Mutual induction
 - B) Faradays laws of electrolysis
 - C) Flemings left hand rule
 - D) Self-induction
89. Which condition is correct for parallel operation of transformer ?
- A) The same voltage ratio
 - B) Input voltage must be same
 - C) The same percentage impedance
 - D) All the above
90. Which method of cooling is generally adopted for low capacity distribution transformer up to 100 KVA ?
- A) Air blast method
 - B) Natural air method
 - C) Oil blast method
 - D) Forced oil and water cooled method
91. What is the unit of luminous intensity ?
- A) Luminous flux
 - B) Candela
 - C) Lumen
 - D) Lux
92. What is the operating temperature of tungsten filament lamp ?
- A) 2300°C
 - B) 2000°C
 - C) 2700°C
 - D) 2500°C

93. Which material is used to make the discharge tube of MA type HPMV lamp ?
A) Quartz tube
B) Copper tube
C) Borosilicate tube
D) Steel tube
94. Which type of motor is used in food mixer ?
A) Repulsion motor
B) Universal motor
C) Split phase motor
D) Shaded pole motor
95. What is the purpose of sole plate in electric kettle ?
A) Acts as a balancing weight
B) Acts as an insulator for element
C) Protect the kettle base from damage
D) Keep the element in close contact with container
96. Which one is a semi-conductor material ?
A) Copper
B) Silicon
C) Mica
D) Aluminium
97. What is the method to increase the conductivity in a semi-conductor ?
A) Heating
B) Hammering
C) Doping
D) Cutting
98. Which type of semi-conductor the free electrons are majority ?
A) P-type
B) PN-type
C) NP-type
D) N-type
99. What is the main application of SCR ?
A) Amplifier
B) Oscillators
C) Multi vibrators
D) Speed control of motors
100. Which doping material is used to make P- type Semi-conductor ?
A) Boron
B) Arsenic
C) Antimony
D) Phosphorous
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Space for Rough Work