

152/2025

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

Total No. of questions : 100

Time : 1 Hour 30 Minutes

Maximum : 100 Marks

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 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.

152/2025

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. What is the disadvantage of solid conductor compared to stranded conductor?
(A) Less rigidity (B) Less flexibility
(C) Low melting point (D) Low mechanical strength
2. Which test is conducted to locate the faults in U.G. cables?
(A) Loop test (B) External growler test
(C) Break down voltage test (D) Insulation resistance test
3. What is the unit of insulation resistance?
(A) Ohm (B) Kilo ohm
(C) Milli ohm (D) Mega ohm
4. Which is the semiconductor material?
(A) Eureka (B) Ebonite
(C) Manganin (D) Germanium
5. Which law states that in closed electric circuit, the applied voltage is equal to the sum of the voltage drops?
(A) Ohm's law (B) Laws of resistance
(C) Kirchhoff's voltage law (D) Kirchhoff's first law
6. What is the change of resistance value of the conductor as its diameter is doubled?
(A) Increases to two times
(B) Decreases to four times
(C) Decrease to half of the value
(D) No change in value of resistance
7. Which material is having negative temperature co-efficient property?
(A) Carbon (B) Eureka
(C) Copper (D) Manganin
8. Which one defines the change in resistance in Ohm (Ω) per degree centigrade ($^{\circ}\text{C}$)?
(A) Temperature effect (B) Laws of temperature
(C) Temperature constant (D) Temperature co-efficient

9. What is the formula for Quantity of electricity (Q)?
 (A) Current $\times$ Time (B) Voltage $\times$ Current
 (C) Current $\times$ Resistance (D) Voltage $\times$ Resistance
10. What is the unit of resistivity?
 (A) ohm/cm (B) ohm/cm²
 (C) ohm – metre (D) ohm/metre
11. A 12 V battery with internal resistance $1\ \Omega$ is connected to an external resistor R_L . The terminal voltage drops to 9 V. Find R_L :
 (A) $2\ \Omega$ (B) $3\ \Omega$
 (C) $4\ \Omega$ (D) $5\ \Omega$
12. In a complex circuit with 8 nodes and 12 branches, how many independent equations can be derived using Kirchhoff's Current Law (KCL) ?
 (A) 8 (B) 7
 (C) 12 (D) 11
13. If the resistance of a wire doubles when its temperature increases by 200°C , the temperature coefficient of resistance is :
 (A) $0.002/^\circ\text{C}$ (B) $0.003/^\circ\text{C}$
 (C) $0.005/^\circ\text{C}$ (D) $0.01/^\circ\text{C}$
14. The electrochemical equivalent (Z) of a metal is $0.00033\ \text{g/C}$. How much current is required to deposit 1 g of metal in 1 hour?
 (A) 0.84 A (B) 1.0 A
 (C) 0.92 A (D) 1.5 A
15. The resistance of a wire is R. If its length is doubled and diameter is halved, its new resistance will be :
 (A) 2 R (B) 4 R
 (C) 8 R (D) 16 R
16. In a dry cell, the function of manganese dioxide (MnO_2) is to :
 (A) Act as an electrolyte (B) Act as a depolarizer
 (C) Provide voltage regulation (D) Supply electrons
17. If 10 cells each of emf 1.5 V and internal resistance $1\ \Omega$ are arranged in 2 rows of 5 cells each (5 in series, 2 in parallel), find the equivalent emf and internal resistance :
 (A) 7.5 V, $5\ \Omega$ (B) 1.5 V, $10\ \Omega$
 (C) 3 V, $2\ \Omega$ (D) 7.5 V, $2.5\ \Omega$
18. Overcharging a lead-acid cell may result in :
 (A) Increased internal resistance
 (B) Gassing and loss of electrolyte
 (C) Permanent increase in capacity
 (D) Reduced specific gravity of electrolyte

19. Sulfation in a lead-acid battery is caused by :
- Excessive charging at low temperature
 - Overloading
 - Using distilled water
 - Long-term partial discharge without charging
20. Which maintenance practice helps reduce sedimentation in lead-acid cells?
- Periodic equalizing charge
 - Using distilled water
 - High-rate discharging
 - Storing at high temperature
21. In the given options, which is the diamagnetic substance?
- Platinum
 - Steel
 - Water
 - Air
22. Which defines the flux density is always lagging behind the magnetising force ?
- Magnetic intensity
 - Residual magnetism
 - Magnetic induction
 - Hysteresis
23. Unit of Reluctance is :
- Weber / metre
 - Ampere turns / metre²
 - Weber / metre²
 - Ampere turns / Weber
24. Which factor affects the polarity of the electromagnet ?
- Direction of current
 - Strength of the magnetic field
 - Length of the coil
 - Strength of current
25. What is SI unit of Flux density?
- Ampere turns
 - Ampere turns per Weber
 - Tesla
 - Weber/meter
26. What will be the effect in value of capacitance if the distance of the plates are reduced in the capacitor?
- Remains same
 - Becomes zero
 - Increases
 - Decreases
27. What indicates the shape of a BH curve of material?
- Pulling power of the magnetic material
 - Magnetic properties of the material
 - Field intensity of the substance
 - Reluctance of the material

28. What will be the effect in polarized electrolytic capacitor is reversely connected?
 (A) Capacitor will be futile
 (B) Current is reduced in the circuit
 (C) Value of capacitance will be increased
 (D) Detonate due to exorbitant torridity
29. Which type of capacitors are used in RF coupling circuit?
 (A) power capacitor (B) Monolithic
 (C) Tantalum (D) Electrolytic
30. Which is the cause for mutation of Permeability of a material?
 (A) Flux density (B) Field intensity
 (C) Length (D) Magneto motive force
31. What is the form factor (K_f) for sinusoidal AC?
 (A) 1.11 (B) 4.44
 (C) 1.00 (D) 2.22
32. For a sinusoidal wave form effective value of voltage is :
 (A) $\frac{E_{\max}}{\pi}$ (B) $\frac{E_{\max}}{\pi/2}$
 (C) $\frac{1}{2}E_{\max}$ (D) $\frac{E_{\max}}{\sqrt{2}}$
33. What is the relation between the Line Voltage (V_L) and Phase Voltage (V_P) in star connected system?
 (A) $V_L = \sqrt{3} V_P$ (B) $V_L = 3 \times P$
 (C) $V_L = V_P / \sqrt{3}$ (D) $V_L = V_P$
34. What is the size of neutral conductor compared to phase conductor in UG cable?
 (A) 1/4 size of phase conductor (B) Half size of phase conductor
 (C) Same size of phase conductor (D) 1/3 size of phase conductor
35. What is the megger reading in a dead short wiring installation?
 (A) $0 \text{ M } \Omega$ (B) $1 \text{ M } \Omega$
 (C) $500 \text{ M } \Omega$ (D) Infinity
36. What is the name of the four insulated conductors group?
 (A) Pair (B) Layer
 (C) Quad (D) Core
37. What is the expansion of ECC?
 (A) Earth continuity cable (B) Earth continuity conductor
 (C) Earth conductor continuity (D) Earth caring conductor

38. Which type of load is protected by the L series MCB?
 (A) Motors (B) Hand tools
 (C) Geyser (D) Air conditioner
39. Which type of conduit used for gas light explosive installation?
 (A) Flexible non-metallic conduits
 (B) Flexible conduits
 (C) Rigid non metallic conduits
 (D) Rigid steel conduits
40. In an AC circuit the ratio of KW/KVA represents :
 (A) Load factor (B) Power factor
 (C) Form factor (D) True factor
41. Which material is used for making yokes of large capacity DC generators?
 (A) Cast iron (B) CRGO Steel
 (C) Rolled steel (D) Silicon steel
42. Which material is used for making Commutator segments of DC machine?
 (A) Annealed copper (B) Brass
 (C) Bronze (D) Hard-drawn copper
43. The field excitation voltage of separately excited dc generator is about _____ volt.
 (A) 110 to 220 volt (B) 24 to 48 volt
 (C) Rated out put voltage of generator (D) 48 to 110 volt
44. How many number of brush position required in a simplex lap wound four pole DC machine?
 (A) Eight (B) Six
 (C) Two (D) Four
45. What will be the emf generated in a DC four pole lap wound generator has 600 armature conductors and flux per pole is 20 mWb running at a speed of 1500 rpm?
 (A) 300 volt (B) 240 volt
 (C) 280 volt (D) 360 volt
46. Which of the following will be the reason for losing residual magnetism in a self excited DC generator ?
 (A) Generator kept idle for long time
 (B) Generator subjected to too much heat
 (C) Generator heavily over loaded
 (D) All of the above

47. For which purpose Compensating winding in large DC machine is used for?
- Reducing cross magnetizing effect of armature reaction
 - Reducing demagnetizing effect of armature reaction
 - For weight balancing the armature core
 - For reducing eddy current loss in armature
48. Which material is used for making starting resistance of three point and four point starters?
- Copper wire
 - Tungstone wire
 - Ureka wire
 - Nichrome wire
49. In a differential compound DC generator series field opposes shunt field, this action is called as :
- Bucking
 - Buckling
 - Flashing
 - Hoisting
50. The stud contacts of three point and four point starters are made of _____ material.
- Silver
 - Copper
 - Brass
 - Bronze
51. Which method adopted to start single phase induction motor?
- Split phase method
 - Varying supply voltage
 - Reversal of terminals
 - Removal of terminals
52. What is the rotor frequency of 3 phase induction motor at the time of starting?
- Less than supply frequency
 - 3 times more than supply frequency
 - Equal to supply frequency
 - More than supply frequency
53. Which speed is called as synchronous speed in 3 phase induction motor?
- No load speed
 - Full load speed
 - Relative speed between stator and rotor
 - Rotating magnetic field speed of stator
54. What is the purpose of using rotor resistance starter to start 3 phase slip ring induction motor?
- Reduce rotor voltage
 - Reduce rotor current
 - Increase the torque
 - Reduce power loss
55. What is the function of timer in automatic star delta starter?
- Trip at over load
 - Switch ON at preset time
 - Change from star to delta
 - Switch OFF at preset time

56. A thermal overload relay is provided in a starter is to protect motor against :
- (A) Open circuit (B) Short circuit
(C) Low voltage (D) Excess current
57. What is the function of centrifugal switch used in capacitor start, capacitor run induction motor?
- (A) Disconnect the running winding after reached 75% to 80% speed
(B) Disconnect the running capacitor after reached 75% to 80% speed
(C) Disconnect the starting capacitor after reached 75% to 80% speed
(D) Disconnect the starting and running winding after reached 75% to 80% speed
58. Which device avoided in panel board assembly?
- (A) Sensors (B) Indicating lamp
(C) Isolating switch (D) Push button switch
59. What is the phase displacement between windings in 3 phase motor?
- (A) 90° (B) 120°
(C) 180° (D) 360°
60. Which is the order of phase sequence in 3 phase supply?
- (A) RBY (B) RYB
(C) BRY (D) YRB
61. Which of the following statement is /are correct?
- (i) In an under damped electrical measuring instrument the pointer will oscillate before coming to the final deflected position.
(ii) The damping torque acts only when the pointer is in motion.
(iii) In eddy current damping a copper or silicon steel disc is made to move in the air gap between poles of a permanent magnet.
- (A) Only (i) (B) Only (ii)
(C) Both (i) and (ii) (D) Both (ii) and (iii)
62. In an electrical measuring instruments the control springs are made of :
- (A) Phosphor-bronze (B) Beryllium-copper
(C) Both (A) and (B) (D) Nickel-cobalt
63. When the pointer of an indicating instrument is in the final deflected position?
- (A) Deflecting torque is zero (B) Damping torque is zero
(C) Controlling torque is zero (D) All of these

64. Which of the following statement is /are correct?
- (i) The control springs in spring controlled instruments helps in leading in and out the current to the moving coil of the instruments.
 - (ii) Heating effect and chemical effect of electric current are employed to obtain deflecting force in measuring instruments.
 - (iii) Alloys used to made springs in spring controlled instruments have high specific resistance.
- (A) Both (i) and (ii) (B) Only (i)
(C) Both (i) and (iii) (D) Both (ii) and (iii)
65. Which of the following statement is /are correct about a moving coil instrument?
- (i) Deflecting torque is directly proportional to the square of the current
 - (ii) Deflecting torque is directly proportional to the current.
 - (iii) Can be used to measure AC as well as DC.
- (A) Both (i) and (ii) (B) Only (i)
(C) Only (ii) (D) Both (ii) and (iii)
66. Which of the following statement is /are correct?
- (i) Transformer work on the principle of self induction
 - (ii) In an ideal transformer magnetising current in the primary winding lags the applied voltage by 90°
 - (iii) EMF equation of transformer is $4.44 f N \phi_m$
- (A) Both (i) and (ii) (B) Only (ii)
(C) Both (ii) and (iii) (D) Only (iii)
67. What is the function of conservator in transformer?
- (A) Prevents the moisture entry
 - (B) Transfers the heat to atmosphere
 - (C) Allows expansion of oil level due to load variation
 - (D) Allows to release internal pressure
68. A 2000/200 Volt, 20 KVA ideal transformer has 66 turns in the secondary. The number of primary turns is :
- (A) 110 (B) 220
(C) 440 (D) 660
69. Which of the following statement is /are correct about parallel operation of two transformers?
- (i) The voltage ratios must be same.
 - (ii) The KVA rating must be same.
 - (iii) For best performance of parallel operation, the regulation of both the transformer must be same.
- (A) Both (i) and (ii) (B) Both (i) and (iii)
(C) Only (i) (D) All of the above (i), (ii) and (iii)

70. Which of the following statement is /are correct?
- (i) When the load and heat on a transformer reduces air will go out from consevator through breather.
 - (ii) The color of silica gel get changes to blue as it absorbs moisture from air.
 - (iii) Buchholz relay is placed between transformer oil tank and conservator.
- (A) Both (i) and (iii) (B) Both (ii) and (iii)
(C) Only (i) (D) Only (iii)
71. The base of Octal Number system is :
- (A) Base 2 (B) Base 8
(C) Base 10 (D) Base 16
72. What is the sum output of a half adder when both inputs are 1?
- (A) 0 (B) 1
(C) 2 (D) None of the above
73. In digital systems the role of flip flop is :
- (A) To generate clock signals
 - (B) To perform arithmetic operations
 - (C) To store data temporarily
 - (D) To multiplex digital signals
74. The comparison of the actual output of a DAC with the expected output is known as :
- (A) Accuracy (B) Linearity
(C) Monotonicity (D) Setting time
75. For soldering Integrated circuits in the Printed circuit boards what type of soldering iron tip is best?
- (A) Pyramid (B) Conical
(C) Round Bevel (D) Chisel taper
76. The frequency of oscillation of a UJT relaxation oscillator is determined by :
- (A) Inductance (B) Capacitance
(C) RC time constant (D) Resistance
77. What is the advantage of using JFETs?
- (A) High input impedance (B) Low input impedance
(C) Low noise (D) High current handling capacity
78. A TRIAC can be triggered by applying :
- (A) A positive gate pulse
 - (B) A negative gate pulse
 - (C) Either positive or negative gate pulse
 - (D) None of the above

79. What is the advantage of an online UPS over offline UPS?
- (A) It works on single phase or three phase supply
 - (B) It gives constant output frequency
 - (C) It gives constant power output
 - (D) It is free from change over and transition problems
80. The output frequency of a half wave rectifier is :
- (A) Same as the input frequency
 - (B) Twice the input frequency
 - (C) Three times the input frequency
 - (D) Half the input frequency
81. Which of the following statement is/are correct regarding non-Conventional energy sources?
- (i) Energy generated by using wind, tides, solar, geothermal heat
 - (ii) Renewable and do not cause environmental pollution
 - (iii) Energy generated using fuels like coal, oil, natural gas and nuclear energy
- (A) Only (ii) and (iii)
 - (B) Only (i) and (ii)
 - (C) Only (iii)
 - (D) Only (i)
82. Which is the main constituent of bio-gas?
- (A) Carbon dioxide
 - (B) Nitrogen
 - (C) Methane
 - (D) Hydrogen sulfide
83. Advantage/s of hydro electric power station is/are :
- (A) It requires very small running cost
 - (B) Simple in construction and require less maintenance
 - (C) Free from pollution
 - (D) All of these
84. Which of the following statement/s is/are correct regarding water turbines?
- (i) Francis turbines and Kaplan turbines are reaction turbines
 - (ii) Water turbines are generally classified into impulse turbines and reaction turbines
 - (iii) Impulse turbines are used for high heads
- (A) Only (i) and (ii)
 - (B) Only (ii) and (iii)
 - (C) Only (iii)
 - (D) (i), (ii) and (iii)
85. Which of the following statement/s is/are correct regarding Solar panels?
- (i) Solar cells are connected together only in series to form a solar module
 - (ii) Solar cells are made of silicon
 - (iii) Solar panel must be installed in the proper tilt angle
- (A) Only (i) and (iii)
 - (B) Only (ii) and (iii)
 - (C) Only (ii)
 - (D) (i), (ii) and (iii)

86. Which of the following component/s used in wind power generation?
- (A) Gear box (B) Rotor blades
(C) Draught fan (D) Both (A) and (B)
87. Which of the following statement/s is/are correct regarding demerits of solar energy?
- (i) High initial cost
(ii) Less reliable and efficiency
(iii) Cannot be used for base load demand
- (A) Only (i) and (ii) (B) Only (i)
(C) Only (iii) (D) (i), (ii) and (iii)
88. Which of the following is/are penstock protection device/s used in hydro electric plant?
- (A) Surge tank (B) Air valve
(C) Both (A) and (B) (D) Draft tube
89. Which component in steam power station is fully extract heat from flue gases and give it to the furnace for coal combustion?
- (A) Economiser (B) Condensers
(C) Air pre-heater (D) Super heater
90. What is the function of turbine used in tidal power generation?
- (A) Convert potential energy into kinetic energy
(B) Prevent water flow through the barrage
(C) Keeps the water flow through the barrage
(D) Convert kinetic energy into electrical energy
91. 220 kV voltage belongs to _____ of the following.
- (A) Secondary transmission (B) Primary distribution
(C) Primary transmission (D) Secondary distribution
92. The cable which connected between distributor and consumer is called as :
- (A) Service main (B) Feeder
(C) Distributer (D) Cut out
93. Single shed pin type insulators are used in _____ voltage lines?
- (A) High voltage lines (B) EHT lines
(C) HT Lines (D) Low and medium voltage lines

94. One disc type insulator is designed work at _____ voltage.
- (A) 33 Kv (B) 11 Kv
(C) 22 Kv (D) 10 Kv
95. The difference in level between point of support and the lower point of conductor is called as :
- (A) Vertical clearance (B) Ground clearance
(C) Sag (D) Corona
96. Universal PG clamps are used for joining :
- (A) Same size of conductors (B) Conductors to towers
(C) Conductors to Insulators (D) Different size of conductors
97. BMPG Clamp means :
- (A) Bimetallic universal parallel grooved clamps
(B) Bimetallic universal parallel graded clamps
(C) Bimetallic unidirectional parallel grooved clamps
(D) Bimetallic universal perfect grooved clamps
98. Overhead lines of low and medium voltage should be erected at height of _____ meter across a street.
- (A) 3.332 meter (B) 5.791 meter
(C) 4.572 m (D) 6.363 meter
99. When an over head line of low and medium voltage passes above a building the minimum vertical clearance required is _____ meter.
- (A) 1.213 meter (B) 5.523 meter
(C) 3.323 meter (D) 2.493 meter
100. For low and medium voltage maximum permissible voltage regulation is :
- (A) 10 % (B) 5 %
(C) 12.50 % (D) 3 %
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