121/2025

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.

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Maximum : 100 marks

Time : 1 hour and 30 minutes

1. The resistance of copper wire to the flow of current through it :

(A) Increases as the diameter of the wire increases

(B) Decreases as the diameter of the wire increases

(C) Increases as the length of the wire increases

(D) Decreases as the length of the wire increases

2. Which of the following material possesses least resistivity?

(A) Copper (B) Silver

(C) Carbon (D) Tungsten

3. Temperature coefficient of a conductor is defined as the

(A) Increase in resistance per centigrade

(B) Decrease in resistance per ohm per centigrade

(C) Increase in resistance per ohm centigrade

(D) Increase in resistance per ohm per degree centigrade

4. Which of the lamp has more resistance?

(A) 60W 250V lamp (B) 40W 250V lamp

(C) 200W 250V lamp (D) 25W 250V lamp

5. The curve representing ohms law is

(A) Linear (B) Parabola

(C) Hyperbola (D) Sine function

6. The conductivity of insulators :

(A) Very high (B) Medium

(C) Very low (D) Positive

7. If a 220 V heater is used on 110 V supply, heat produced by it will be as much :

(A) One-fourth (B) Half

(C) Three-fourth (D) One-half

8. The coulomb is a unit of

(A) Power (B) Quantity of electricity

(C) Quantity of flux (D) Potential difference

9. Which of the following wires has the greatest cross-sectional area?

(A) 8 SWG (B) 35 SWG

(C) 20 SWG (D) 14 SWG

10. A metallic sheath is provided over the insulation to protect the able from

(A) Mechanical injury (B) Earth fault

(C) Moisture (D) Corrosion

11. According to Ohm's Law, the relation between resistance, current and voltage is stated as :

(A) R = I/V (B) R = VI

(C) V = I/R (D) I = V/R

12. Which is inversely proportional to the resistance of a conductor?

(A) Temperature (B) Area of cross section

(C) Length (D) Resistivity

13. Which material is having negative temperature co-efficient of resistance?

(A) Eureka (B) Copper

(C) Mica (D) Manganin

14. Which law states that in closed electric circuit, the applied voltage is equal to the sum of the voltage drops?

(A) Kirchhoff's second law (B) Laws of resistance

(C) Ohm's law (D) Kirchhoff's first law

15. What is the effect of electric current on battery charging?

(A) Heating effect (B) Chemical effect

(C) Gas ionization effect (D) Magnetic effect

16. Which is used as a positive electrode in a dry cell?

(A) Copper (B) Lithium

(C) Carbon (D) Zinc

17. What is the name of defect that bending of plates in secondary cells?

(A) Buckling
(B) Partial short
(C) Hard sulphation
(D) Local action

18. Five cells are connected in a parallel combination with an emf of 2V each. The output voltage is

(A) 10V
(B) 1V
(C) 1.5V
(D) 2V

19. Why the vent plug is kept open during charging of a battery?

(A) To check the level of electrolyte
(B) To allow oxygen enter inside
(C) To escape the gas freely
(D) To check the colour changes in the plates

20. Sedimentation in lead acid batteries occures due to

(A) Slow charging at a low rate
(B) Non utilization for longer periods
(C) Over discharging at slow rate
(D) Over charging at high rate

21. What will be the inductance when the iron of an iron cored coil is removed to make it as air cored coil?

(A) More
(B) Less
(C) Same
(D) None of these

22. What is the S.I. unit of Flux density?

(A) Tesla
(B) Weber
(C) Weber/metre
(D) Ampere-turns

23. What is the similar term in magnetic circuit for "conductance" in electrical circuit?

(A) Reluctivity
(B) Permeance
(C) Reluctance
(D) Permeability

24. The magnitude of force acting on a current carrying conductor placed in a magnetic field is independent of

(A) Flux density
(B) Length of conductor
(C) Cross sectional area of conductor
(D) Current flowing through the conductor

25. What is the unit of Magneto Motive Force (MMF) ?

(A) Ampere/M2 (B) Ampere - M

(C) Ampere - turns (D) Ampere / turns

26. Which factor affects the polarity of the electromagnet?

(A) Length of the coil (B) Direction of current

(C) Strength of current (D) Strength of the magnetic field

27. Which is the cause for changing the permeability?

(A) Length (B) Flux density

(C) Field intensity (D) Magneto motive force

28. What is the effect on surrounding metal placed in a magnetic field?

(A) Hysteresis (B) Skin effect

(C) Eddy current (D) Dielectric stress

29. The area of Hysteresis loss is a measure of :

(A) Magnetic flux (B) Permeance

(C) mmf (D) Energy loss

30. Iron loss is known as :

(A) Hysteresis loss (B) Eddy current loss

(C) Both (A) and (B) (D) None of these

31. The unit of frequency is :

(A) Ampere (B) Volt

(C) Hertz (D) Time

32. The effective value of an alternating current can be calculated by :

(A) $I = 0.707\ I_m$ (B) $I = I_m$

(C) $I = 0.637\ I_m$ (D) $I = 0.22\ I_m$

33. Value of form factor for an alternating current is :

(A) 1.414 (B) 1.211

(C) 1.51 (D) 1.11

34. In pure inductive circuit value of power factor is :

(A) 1 (B) 0

(C) 2 (D) 5

35. The equation for capacitive reactance of an alternating current circuit is :

(A) $X_c = \frac{1}{2\pi fc}$ (B) $X_c = 2\pi fc$

(C) $X_c = 2\pi f$ (D) $X_c = 2\pi fh$

36. Method used for reducing the earth electrode resistance is :

(A) connecting a number of earth electrodes in series

(B) connecting two earth electrodes in series

(C) connecting a number of earth electrodes in parallel

(D) connecting a number of earth electrodes in series - parallel

37. Power factor of an alternating current circuit is :

(A) R/X (B) R/C

(C) RC (D) R/Z

38. In alternating current circuit reactive power is :

(A) P = VI (B) P = VI sin θ

(C) P = VI cos θ (D) P = VC

39. In an alternating current circuit of frequency 50 Hz time period is :

(A) 50 (B) 0.5

(C) 0.02 (D) 0.07

40. In power triangle for alternating current circuit :

(A) $VA = \sqrt{W^2 + VAR^2}$ (B) $VA = \sqrt{W^2 - VAR^2}$

(C) $VA = \sqrt{W + VAR}$ (D) $VA = \sqrt{W^2 + VAR}$

41. Which rule is used to find the direction of induced emf in DC generator?

(A) Cork screw rule (B) Fleming's left-hand rule

(C) Fleming's right hand rule (D) Right hand palm rule

42. Which type of DC generator works in absence of residual magnetism?

(A) Shunt generator (B) Series generator

(C) Compound generator (D) Separately excited generator

43. EMF equation of DC generator is

(A) ϕ ZNP/60xA (B) ϕ ZN/P/60xA

(C) ϕ ZNP/60/A (D) ϕ ZNPx60xA

44. In EMF equation A denoted for

(A) No. of parallel path in armature
(B) No. of poles in generator
(C) Armature revolution per minute
(D) Flux per pole

45. Combination of series field and shunt field within one generator is

(A) Shunt generator
(B) Series generator
(C) Compound generator
(D) Compound motor

46. What is the purpose of compensating winding in DC generator?

(A) Maintain constant output voltage
(B) Neutralizes demagnetizing effect
(C) Decreases excitation current in field coils
(D) Minimizes rough commutation

47. No-load speed of which of the following motor will be highest?

(A) Shunt
(B) Cumulative compound
(C) Series
(D) Differential compound

48. Which type of DC motor used for constant speed drives?

(A) Differential long shunt compound motor
(B) Differential short shunt compound motor
(C) DC series motor
(D) DC shunt motor

49. Which speed control method offers below normal speed in DC shunt motor?

(A) Armature control method
(B) Field control method
(C) Voltage control method
(D) Ward Leonard speed control system

50. Why the holding coil of a 3 point starter is connected in series with shunt field?

(A) To limit load current
(B) To run motor at low voltage
(C) To hold the handle plunger firmly
(D) To protect the motor from high speed

51. On which factor the direction of rotation of 3 phase motor rotor depends?

(A) Phase voltage of supply
(B) Phase sequence of supply to stator field
(C) Frequency of supply
(D) Line voltage of supply

52. Torque of 3 phase induction motor depends up on the :

(A) Field winding
(B) Speed of rotor
(C) Rotor resistance
(D) Frequency of supply

53. In a double squirrel cage motor, the inner cage bars made up of :

(A) High resistance metals like brass
(B) High resistance metals like GI
(C) Low resistance metals like steel
(D) Low resistance metals like copper

54. Slip of motor, S =

(A) (NR – NS) / NS
(B) (NS – NR) / NR
(C) (NS – NR) / NS
(D) (NR – NS) / NR

55. What are the factors depends upon the synchronous speed of 3 phase motor?

(A) Supply frequency and rotor resistance
(B) Supply frequency and number of stator poles
(C) Number of stator poles and voltage
(D) Supply frequency and voltage

56. If the capacitor in capacitor type fan is shorted the fan will :

(A) Slowly Run
(B) Run fast
(C) Run with noise
(D) Not run

57. A thermal over load relay is provided in a starter to protect the motor against :

(A) Low voltage
(B) Short circuit
(C) Excess current
(D) Low power factor

58. Capacitor start and capacitor run motors are used in

(A) Hoists
(B) Cranes
(C) Rolling mills
(D) Refrigerators

59. What is the function of centrifugal switch in an induction motor?

(A) To disconnect the running winding
(B) To disconnect the starting winding
(C) To improve the power factor
(D) To improve the non power factor

60. The rotor current frequency in a slipring induction motor depends on :

(A) Rotor conductor
(B) Rotor inductor
(C) Amount of slip
(D) Induction reactance

61. Which of the following statement is not true for dynamometer type wattmeter?

(A) Low torque/weight ratio

(B) The scale is uniform

(C) Used for measuring in both AC and DC

(D) The scale is ununiform

62. In two wattmeter method of power measurement the reading of one wattmeter is zero and other reads the total power, then the power factor will be :

(A) Equal to 1 (B) Equal to 0.5

(C) Less than 0.5 (D) Equal to zero

63. Which of the following statement is/are correct for permanent magnet moving coil instrument?

(1) The scale of the permanent magnet moving coil instrument is uniform

(2) The deflecting torque of a permanent magnet moving coil instrument is directly proportional to the current passing through the coil.

(3) PMMC instrument used for measuring both DC and AC values

(A) Both (1) and (2) (B) (1) only

(C) (2) only (D) (1) and (3)

64. How many segments are available in LED display format of digital multimeter?

(A) 6 (B) 8

(C) 7 (D) 9

65. What is the principle of dynamometer type Instrument?

(A) DC motor principle (B) Electro static principle

(C) Induction principle (D) Mutual induction

66. The capacity of Transformers are always rated by its :

(A) Apparent power (B) True power

(C) Reactive power (D) Kilowatt

67. Where the oil level indicator is typically fitted in distribution transformers?

(A) Main tank (B) Conservator tank

(C) Cooling tubes (D) Bushings

68. What is ratio of composition of Steel and silicon in transformer Core?

(A) 97% silicon and 3% steel (B) 3% Silicon and 97% steel

(C) 95 % steel and 5% silicon (D) 93% steel and 7% silicon

69. What is the major disadvantage of an auto transformer?

(A) Smaller

(B) Lighter in weight

(C) Less efficient compared to two winding transformer

(D) Does not isolate the secondary from primary circuit.

70. What is the purpose of explosion vent in power transformer?

(A) Air releasing (B) Moisture releasing

(C) Pressure releasing (D) Over load releasing

71. The range of visual spectrum is :

(A) 800 nm - 1000 nm (B) 480 nm - 1000 nm

(C) 780 nm - 980 nm (D) 380 nm - 780 nm

72. The avalanche breakdown primarily depends on the phenomenon of :

(A) Ionization (B) Doping

(C) Collision (D) Recombination

73. Which factor increase the performance of LED light?

(A) Ferro resonance (B) Customisation

(C) Utility factor (D) Thermal management

74. What is the full form of the abbreviation COB?

(A) Chip on Board (B) Circuit on Board

(C) Connection on Board (D) Capacitor on Board

75. Which term is related to the information about hue and saturation of a colour?

(A) Luminance (B) Resonance

(C) Chrominance (D) Ferro resonance

76. The forbidden energy gap for germanium is :

(A) 0.3 eV (B) 3.5 eV

(C) 0.72 eV (D) 1.1 eV

77. The valencies of Phosphorus and Silicon materials are :

(A) 4 and 5 (B) 5 and 4

(C) 3 and 5 (D) 3 and 4

78. Which of the following will serve as a donor impurity in silicon?

(A) Boron (B) Indium

(C) Germanium (D) Antimony

79. Which of the following diode show negative resistance region?

(A) Rectifier diode (B) Tunnel diode

(C) Zener diode (D) PIN diode

80. The most heavily doped region in a transistor is :

(A) Base (B) Collector

(C) Emitter (D) Both emitter and collector

81. In hydro-electric power plant Pelton wheel is used for :

(A) high head (B) medium head

(C) low head (D) low and medium head

82. Which of the following is a non-conventional type of power generation?

(A) diesel power plant (B) nuclear power plant

(C) hydro electric power plant (D) tidal power plant

83. Which device heats the feedwater on its way to boiler by deriving the heat from the flue gas in steam power plant?

(A) air pre heater (B) economiser

(C) super heater (D) feed water heater

84. Which device senses the wind speed in a windmill?

(A) Turbine controller (B) Charge controller

(C) Wind governer (D) Chopper controller

85. What is the function of condenser in steam power plant?

(A) It creates a very low pressure at the exhaust of turbine

(B) The condensed steam can be used as feed water to boiler.

(C) Both (A) and (B)

(D) None of these

86. A dam-like structure built across the entrance of gulf in tidal power plant is known as :

(A) Spillways (B) Embarkments

(C) Barrage (D) Basin

87. Which of the following statement is /are correct?

(i) Cadmium is used as control rod in nuclear reactor.

(ii) The moderator slows down the neutrons before they bombard the fuel rods in nuclear reactor.

(iii) In heat exchanger nuclear fuel is subjected to nuclear fission.

(A) Only (i) (B) Only (ii)

(C) Both (i) and (ii) (D) Both (ii) and (iii)

88. What is the function of surge tank in hydro-electric power plant?

(A) Carries water to turbines

(B) Prevents water flow to other parts of dam

(C) Discharges surplus water from reservoir

(D) To limit the abnormal pressure in the penstock

89. Which of the following statement is / are correct?

(i) The top surface of solar cell consist of an extremely thin layer of P-type material.

(ii) Solar modules uses photons in the sunlight to produce DC electricity.

(iii) The unit of solar Irradiance is volt per square metre.

(A) Both (i) and (ii) (B) Both (ii) and (iii)

(C) Only (i) (D) All of the above (i) (ii) and (iii)

90. Heat produced by 1 kg of nuclear fuel is equal to that produced by :

(A) 2750 Ton of coal (B) 275 Ton of coal

(C) 27500 Ton of coal (D) 27.5 Ton of coal

91. From which element in distribution system the tapings are taken for giving electric supply to the consumers :

(A) Distributor (B) Transformer

(C) Feeder (D) Service line

92. Why the voltage of the electric supply is stepped up using transformer for long distance AC transmission?

(A) Transformer has highest efficiency about 95%

(B) Cross sectional area of the conductor can be increased

(C) Higher voltage requires lesser thickness of insulation

(D) Higher voltage will make the cost of supply cheaper

93. Which statement is correct about AC and DC transmission?

(i) There is no skin effect in DC transmission

(ii) There is no skin effect in AC transmission

(iii) Due to skin effect, more copper is required in AC transmission.

(A) Only statement (i) is correct

(B) Only statement (ii) is correct

(C) Both Statement (i) and (iii) are correct

(D) Both Statement (ii) and (iii) are correct

94. Which insulator is used for mounting drop out fuses?

(A) Stay insulator (B) Shackle insulator

(C) Pin insulator (D) Post insulator

95. What is the full form of ACSR?

(A) All Conductors Selected Reinforced

(B) Aluminium Conductor Steel Reinforced

(C) All Conductors Steel Reinforced

(D) Aluminium Conductor Selected Reinforced

96. Upto which voltage, pin type insulators are used?

(A) 415 v (B) 11 kv

(C) 33 kv (D) 66 kv

97. What is the minimum clearance between live wires on the same side of support in horizontal configuration of conductors?

(A) 30 cm (B) 45 cm

(C) 20 cm (D) 60 cm

98. A transmission line is called as a long transmission line when its length is?

(A) More than 50 km (B) More than 150 km

(C) More than 500 km (D) More than 1000 km

99. What should be the depth of the pit for a 9m long line support?

(A) 1 m (B) 1.5 m

(C) 2 m (D) 2.5 m

100. What is the permitted variation from declared supply voltage to the consumers in case of high voltage?

(A) 3% (B) 5%

(C) 12.5% (D) 15%

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