# 123/24

**Question Booklet Alpha Code**

**A**

| Question Booklet Sl. No. |
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A

**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 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.

A

1. Which of the following statement is/are correct about first aid for burn ?
   i. Use creams or ointments immediately if the burn is second degree.
   ii. If the burn is third degree, should be covered with a damp cloth.
   iii. Immersing or flushing with cool water if the burn is first degree.
   A) Only ii and iii
   B) Only i and ii
   C) All of the above i, ii and iii
   D) Only iii

2. As per Indian Standard, kitchen fires (fire involve combustible cooking media such as vegetable or animal oils and fats) are categorised under
   A) Class K
   B) Class D
   C) Class F
   D) None of these

3. Which of the following statement is/are correct about a ball pein hammer ?
   i. The wedges fix the handle in the eyehole.
   ii. The weight of the hammer is stamped on face.
   iii. Hammer is made of drop-forged carbon steel.
   A) Only i
   B) Only iii
   C) Only i and iii
   D) All of the above i, ii and iii

4. The included angle of the V in V-block is
   A) 90 degree
   B) 60 degree
   C) 45 degree
   D) 120 degree

5. In a vernier caliper, 9 main scale divisions are divided into 10 equal parts in the vernier scale. Value of one main scale division is 1 mm. What is the least count of this vernier caliper ?
   A) 0.2 mm
   B) 0.1 mm
   C) 0.02 mm
   D) 0.01 mm

6. Which of the following statement is/are correct about standard wire gauge ?
   i. The thickness of the sheet and diameter of wire are measured with the help of the standard wire gauge
   ii. Smaller gauge numbers representing small size, higher gauge number representing larger sizes
   iii. Wire diameter is checked by inserting the wire on the circle portion of the gauge.
   A) Only ii and iii
   B) Only i and iii
   C) All of the above i, ii and iii
   D) Only i

7. Which stake is used for turning up flanges on metal discs ?
   A) Funnel stake
   B) Half moon stake
   C) Round bottom stake
   D) Hatchet stake

8. Which of the following statement is/are correct in case of oxy-acetylene gas welding ?
   i. Soap water is used to check the leakage in the acetylene regulator connections
   ii. Colour of oxygen gas cylinder is black
   iii. Oxygen gas cylinder valves have right hand thread.
   A) Only ii and iii
   B) Only i and iii
   C) Only iii
   D) All of the above i, ii and iii

9. Which is used to convert AC into DC in AC welding transformer ?
   A) Transformer
   B) Rectifier
   C) Capacitor
   D) Transistor

10. Which type of joint is used for extending the length of conductor in over head lines ?
   A) Scarfed joint
   B) Britannia “T” joint
   C) Aerial tap joint
   D) Western Union Joint

11. What is the value of resistance in an open circuit ?
   A) Infinity
   B) Zero
   C) Low
   D) High

12. Which of the following capacitors is marked for polarity ?
   A) Air
   B) Mica
   C) Electrolytic
   D) Paper

13. Where the capacitor is connected in a single phase permanent capacitor motor ?
   A) In series with running winding
   B) In series with starting winding
   C) In parallel with running winding
   D) In parallel with starting winding

14. What is the application of shaded pole motor ?
   A) Ceiling fan
   B) Wet grinder
   C) Hair dryer
   D) Washing machine

15. What is the function of centrifugal switch in single phase motor ?
   A) Protects from over current
   B) Make a break the starting winding from supply
   C) Maintains constant speed
   D) Protects the motor from overloading

16. What is the function of timer in automatic star delta starter ?
    A) Change from star to delta
    B) Switch ON at pre set time
    C) Trip at over load
    D) Switch OFF at pre set time

17. What is the purpose of using rotor resistance starter to start 3 phase slip ring induction motor ?
    A) Reduce rotor current
    B) Reduce rotor voltage
    C) Reduce the power loss
    D) Increase the torque

18. A semiconductor has
    A) Zero temperature co-efficient of resistance
    B) Negative temperature co-efficient of resistance
    C) Positive temperature co-efficient of resistance
    D) None of the above

19. What is the main use of a Zener diode ?
    A) Motor speed control
    B) Power amplification
    C) Voltage regulation
    D) Voltage amplification

20. One ton of refrigeration is equal to
    A) 210 KJ/min.  B) 276 KJ/min.  C) 2.5 KW  D) 5 KW

21. The sub-cooling is a process of cooling the refrigerant
    A) Before compression
    B) After compression
    C) Before throttling
    D) After throttling

22. The refrigerant commonly used in vapour absorption system is
    A) Carbon Dioxide
    B) Freon
    C) Aqua-ammonia
    D) Water

23. The compression device used in a steam jet refrigeration system is
    A) Liquid pump
    B) Diffuser
    C) Vapour compressor
    D) Steam ejector

24. The refrigerant R-764 stands for
    A) Carbon Dioxide
    B) Sulphur Dioxide
    C) Ammonia
    D) Ethylene

25. The wrench used when odd sizes of the nuts and bolts heads are to be handled is
    A) Adjustable Wrench
    B) Box Wrench
    C) Socket Wrench
    D) Open Ended Wrench

26. 1 bar is equal to
    A) $10^2$ N/m$^2$
    B) $10^3$ N/m$^2$
    C) $10^5$ N/m$^2$
    D) $10^7$ N/m$^2$

27. The law which is used to understand the concept of energy conservation is
    A) First Law
    B) Second Law
    C) Zeroth Law
    D) Both A) and B)

28. The volume of a given mass of a perfect gas varies directly as its absolute temperature, when the absolute pressure remains constant. This statement belongs to
    A) Boyle's Law
    B) Charle's Law
    C) Joule's Law
    D) Gay-Lussac Law

29. The coefficient of performance is always
    A) Equal to one
    B) Less than one
    C) Greater than one
    D) Zero

30. During a refrigeration cycle, heat is rejected by the refrigerant in a
    A) Compressor
    B) Condenser
    C) Expansion valve
    D) Evaporator

31. The function of halide torch is
    A) Defrosting of cooling coil
    B) Facilitating better lubrication in the refrigerator
    C) Super heating of vapour refrigerant
    D) Detecting leakage of refrigerant

32. The reciprocating compressors are suitable for
    A) Small displacement and high condensing pressure
    B) Small displacement and low condensing pressure
    C) Large displacement and high condensing pressure
    D) Large displacement and low condensing pressure

33. A thrust bearing is generally used in
    A) Reciprocating refrigerant compressor
    B) Centrifugal refrigerant compressor
    C) Rotary vane type refrigerant compressor
    D) None of these

34. Centrifugal refrigerant compressors are employed for the following refrigerant
    A) R-22 B) R-717
    C) R-21 D) R-113

35. In a double pipe condenser
    A) Refrigerant flows through inner pipe and water through annular outer pipe
    B) Water flows through inner pipe and refrigerant through annular outer pipe
    C) Both A) and B)
    D) None of the above

36. For ammonia refrigerating system, the tubes of a shell and tube condenser are made of
    A) Copper B) Brass
    C) Steel D) Aluminium

37. The condensing medium used in evaporative condenser is
    A) Air only B) Water only
    C) Both air and water D) None of the above

38. The evaporator generally used in domestic refrigerators and frozen food industry is
    A) Shell and tube evaporator B) Tube-in-tube evaporator
    C) Finned evaporator D) Plate evaporator

39. The capillary tube expansion device is used in
    A) Domestic refrigerators B) Room air conditioners
    C) Water coolers D) All of the above

40. The refrigerant supplied to a compressor must be
    A) Dry saturated liquid refrigerant
    B) Super-heated vapour refrigerant
    C) A mixture of liquid and vapour refrigerant
    D) None of the above

41. Which of the following compressor is generally used in domestic refrigerator ?
    A) Axial
    B) Centrifugal
    C) Reciprocating
    D) Rotating screw

42. In a domestic refrigerator, periodic defrosting is required because frosting
    A) Reduces heat extraction
    B) Causes corrosion of materials
    C) Partially blocks refrigerant flow
    D) Overcools food stuff

43. Direct expansion coil evaporator is
    A) Dry type evaporator
    B) Wet type evaporator
    C) Flooded type evaporator
    D) None of the above

44. In a refrigeration system, the expansion device is connected between
    A) Compressor and condenser
    B) Compressor and receiver
    C) Receiver and evaporator
    D) Evaporator and compressor

45. With thermostatic expansion valve used in vapour compression refrigeration system, if the discharge pressure is very high, the reason is
    A) Insufficient cooling water
    B) Cooling water above design temperature
    C) Air and non-condensable gases in condenser
    D) All of the above

46. An evaporator is also known as
    A) Cooling coil
    B) Chilling coil
    C) Freezing coil
    D) All of these

47. Most thermostatic expansion valve are set for a superheat of
    A) 5°C
    B) 12°C
    C) 18°C
    D) 20°C

48. ODP is a factor based on the percentage weight of _____ in a compound and its life time (stability) in the atmosphere.
    A) Hydrogen
    B) Chlorine
    C) Nitrogen
    D) Argon

49. While numbering the refrigerant R134a, the first number on the right side is the number of _____ atoms in that refrigerant.
    A) Fluorine
    B) Carbon
    C) Hydrogen
    D) Chlorine

50. What is the cylinder colour code of Refrigerant R 410A ?
    A) Sky Blue
    B) Orange
    C) Rose
    D) Silver

51. Boiling point of R22 is
    A) –46°C
    B) –47°C
    C) –30°C
    D) –41°C

52. State the leak detection method which involves burning of fuel gas near a copper plate and using a rubber hose to siphon air from areas suspected of a leaking refrigerant.
    A) Halide torch leak detection
    B) Electronic leak detection
    C) Soap solution method
    D) Fluorescent dye leak detection

53. Mention the type of evaporator which usually have Aluminium plate type coil and have no fins which is used in conventional refrigerators.
    A) Shell and tube evaporators
    B) Static type evaporators
    C) Forced draft evaporators
    D) Flooded type evaporators

54. The relay coil and compressor motor starting windings are connected in series. What is the function of a relay in a refrigerator wiring circuit ?
    A) Disconnect the motor
    B) Disconnect the running winding
    C) Disconnect OLP
    D) Disconnect starting winding

55. The test pressure of a refrigerator is based on _____ pressure of the system.
    A) Suction pressure
    B) Evaporator pressure
    C) Discharge pressure
    D) Both A) and C)

56. Which electrical device activates the heater and stops the compressor, condenser fan and evaporator fan during defrosting period ?
    A) Relay
    B) Timer
    C) Thermostat
    D) Capacitor

57. State the name of the component which turns off the heater after the defrost period in a frost free refrigerator
    A) Fuse
    B) Damper
    C) Bimetal thermostat
    D) Fan motor

58. In a BLDC motor which component generates a DC magnetic field instead of AC magnetic field that is produced by passing AC current through an electro magnet ?
    A) Transformer
    B) Rectifier
    C) VFD
    D) Permanent magnet

59. Which type of expansion device is used in a storage type water cooler ?
    A) Capillary tube
    B) Thermostatic expansion valve
    C) Electronic expansion valve
    D) Constant pressure expansion valve

60. What type of mechanism provided to reduce the water inlet temperature before entering the evaporator tank in an instantaneous type water cooler ?
    A) Economiser
    B) Pre cooler
    C) Insulator
    D) Faucet

61. How many running capacitors are used in a CSIR wiring circuit of a visible cooler ?
    A) One
    B) Two
    C) Running capacitors are not used
    D) Three

62. What is the usual operation temperature range of a Deep Freezer ?
    A) 10°C to 15°C
    B) – 5°C to –15°C
    C) –15°C to – 60°C
    D) –15°C to – 34°C

63. Which among the following is the reason not to trip a deep freezer ?
    A) High discharge temperature due to non condensable gas in the system
    B) Sufficient refrigerant in the system
    C) Condenser hot air short cycling
    D) Evaporator gets enormous amount of warm or hot food load

64. What is the maximum incoming water pressure of an ice cube machine ?
    A) 60 PSI
    B) 55 PSI
    C) 65 PSI
    D) 20 PSI

65. Name the electrically operated switch/control instrument which controls the temperature of a refrigerated space or product by cycling the compressor.
    A) OLP
    B) Relay
    C) Thermostat
    D) Centrifugal switch

66. State the term related to a window air conditioner's performance ratio that expresses cooling capacity in BTU/Hr for each watt of power consumed.
    A) Coefficient of Performance (COP)
    B) Seasonal Energy Efficiency Ratio (SEER)
    C) Heating Seasonal Performance Factor (HSPF)
    D) Energy Efficiency Ratio (EER)

67. An air conditioner which is working with the help of a potential relay used in its wiring circuit, connection of start capacitor should be with _____ terminal of the relay.
    A) Terminal 2
    B) Terminal 1
    C) Terminal 5
    D) Terminal 4

68. Name the evacuation method in which uses a vacuum pump to pull a vacuum of 250 microns (0.25 mm Hg) or deeper until no vapour or other vapour remains in the system.
    A) Triple vacuum
    B) Normal vacuum
    C) Deep vacuum
    D) Retrofitting

69. How to place the refrigerant cylinder to charge with vapour refrigerant into an air conditioning systems low side ?
    A) Upright position
    B) Horizontal position
    C) Inclined position
    D) Upside down position

70. Which one is correct for an outdoor unit of a split air conditioner ?
    A) Compressor, Control panel, Air filter, Blower
    B) Capillary tube, Evaporator coils, Compressor, Blower
    C) Thermistor, Display panel, Thermostat, Drier
    D) Compressor, Fan motor, Condenser, Service valves

71. What is the normal running current of a split air conditioner having capacity 1.5 TR ?
    A) 8.5 Amps
    B) 7 Amps
    C) 9 Amps
    D) 9.5 Amps

72. Which arrangement helps an air conditioning system to increase sub cooling and decrease flash-gas of refrigerant ?
    A) Super heat
    B) Suction line accumulator
    C) Liquid suction heat exchanger
    D) Vapour discharge heat exchanger

73. Which switch opens its contact and stops the compressor motor when the suction pressure or evaporator pressure falls ?
    A) High pressure cut out switch
    B) Low pressure cut out switch
    C) Oil pressure switch
    D) Thermostatic switch

74. An inverter equipped split air conditioner have a _____ that incorporate an adjustable inverter to control speed of compressor motor and cooling output of system.
    A) VFD
    B) VAV
    C) VRV
    D) VRF

75. The important part used in an ice candy machine for freezing the candy is
    A) ice port
    B) ice bin
    C) receiver
    D) ice can

76. Which refrigerant is commonly used in commercial ice plant ?
    A) Freon 22
    B) R134a
    C) Ammonia
    D) Freon 12

77. What is the function of brine agitator in an ice plant ?
    A) To obtain uniform temperature
    B) To reduce compressor power
    C) To increase COP
    D) To increase TR

78. Which component is used to maintain a constant temperature in walk in cooler ?
    A) Door switch
    B) Overload protector
    C) Thermostat
    D) Relay

79. The process of removing moisture from the food product is called
    A) Pasteuriation
    B) Heat processing
    C) Canning
    D) Dehydration

80. Generally used method for protecting milk against bacterial infection is
    A) Canning
    B) Deep Freezing
    C) Pasteuriation
    D) Heat processing

81. Leakage in the vapour compression refrigeration system using ammonia as refrigerant is detected by
    A) sulphur candle
    B) halide torch
    C) soap solution
    D) burning candle

82. The difference between dry bulb temperature and wet bulb temperature is called
    A) degree of saturation
    B) dry bulb depression
    C) wet bulb depression
    D) dew point temperature

83. Generally used process in summer air conditioning is
    A) Sensible cooling
    B) Cooling and dehumidification
    C) Cooling and humidification
    D) Sensible heating

84. The ratio of sensible heat to total heat is known as
    A) Relative humidity
    B) ADP
    C) Sensible heat factor
    D) Specific humidity

85. On a psychrometric chart sensible cooling is represented by
    A) Horizontal line
    B) Curved line
    C) Vertical line
    D) Inclined line

86. The conditioned air supplied to the room must have the capacity to take up
    A) room latent heat load only
    B) room sensible heat load only
    C) room sensible heat and latent heat load
    D) moisture content

87. The difference in temperature of the warm water and the cold water in the cooling tower is called
    A) cooling tower approach
    B) cooling tower range
    C) cooling tower efficiency
    D) cooling tower capacity

88. Which one is the daily maintenance in central air conditioning ?
    A) Cooling tower sump sludge cleaning
    B) Liquid line strainer cleaning
    C) Descale water cooled condenser
    D) Check cooling air water and refrigerant temperatures

89. Package air conditioners are found in normal capacity up to
    A) 15 Tons
    B) 30 Tons
    C) 60 Tons
    D) 100 Tons

90. An air conditioner in which one or more assemblies are disassembled from other assemblies is called
    A) Commercial Unit
    B) Single Unit
    C) Split Unit
    D) Package Unit

91. A duct is said to be a low velocity duct if the velocity of air in the duct is up to
    A) 800 m/min
    B) 1200 m/min
    C) 1800 m/min
    D) 1000 m/min

92. For rectangular ducts the aspect ratio is equal to
    A) Difference of longer and shorter sides
    B) Sum of longer and shorter sides
    C) Ratio of longer and shorter sides
    D) Longer and shorter sides

93. Which type of duct requires least material for carrying air ?
    A) Circular
    B) Square
    C) Trapezoidal
    D) Rectangular

94. The axial flow fans are particularly suitable for handling
    A) large volume of air at relatively low pressure
    B) small volume of air at relatively high pressure
    C) large volume of air at relatively high pressure
    D) small volume of air at relatively low pressure

95. The air filtered by electronic filter is passed from
    A) Electrodynamic field
    B) Electromagnetic field
    C) Electromotive field
    D) Electrostatic field

96. What is the percentage efficiencies in fine filter ?
    A) 57.30%
    B) 71.50%
    C) 100%
    D) 99.90%

97. Which filter removes tobacco smoke and other odours ?
    A) Electronic filter
    B) Pre filter
    C) Coarse filter
    D) Fine filter

98. Which component engage and disengage the compressor with thermostat in an automobile air conditioner ?
    A) Thermostat
    B) Magnetic clutch
    C) Relay
    D) Rheostat

99. The AC of a car air conditioning system can be regarded as
    A) DX system
    B) Indirect system
    C) Direct and Indirect system
    D) Neither direct nor indirect system

100. What is the reason for water dripping inside the air conditioned bus ?
    A) Worn out shock absorbers on the bus wheels
    B) Poor insulation at the bottom of drain pan
    C) Leakage of evaporator coil
    D) Drain pan is leak proof

Space for Rough Work