

# 132/2017

Question Booklet  
Alpha Code

A

Question Booklet  
Serial Number

Total No. of Questions: 100

Maximum : 100 Marks

Time : 75 Minutes

## 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.

132/2017-A





**0132/2017**

Maximum : 100 Marks

Time : 1 hour and 15 minutes

1. Eastern most point of India is \_\_\_\_\_  
(A) Indira Point (B) Cape Comerine  
(C) Indira Col (D) Kibithu
2. \_\_\_\_\_ is the only Indian State through which the Indus flows.  
(A) Jammu Kashmir (B) Gujarat  
(C) Rajasthan (D) Haryana
3. The coldest place in India is \_\_\_\_\_.  
(A) Drass Valley (B) Shimla  
(C) Kashmir (D) Kodaikanal
4. North-east monsoon is commonly known as  
(A) Graphic rainfall (B) October heat  
(C) Cherri Blossom (D) Mango shower
5. Red colour of the 'red soil' is due to the high concentration of \_\_\_\_\_.  
(A) Calcium oxide (B) Aluminium oxide  
(C) Iron oxide (D) Sodium chloride
6. Egg bowl of India is \_\_\_\_\_.  
(A) Kerala (B) Assam  
(C) Andhra Pradesh (D) Arunachal Pradesh
7. Who is the Father of Indus Economics ?  
(A) Dadabhai Naoroji (B) M. Viswesarayya  
(C) Jawaharlal Nehru (D) Sardar Patel
8. First Five Year Plan gave priority to \_\_\_\_\_.  
(A) Poverty Alleviation (B) Industrialisation  
(C) Agricultural Development (D) Reducing Unemployment
9. The first session of Swaraj Party was held at  
(A) Delhi (B) Allahabad  
(C) Lahore (D) Calcutta
10. Ancient University named 'Kandallursala' situated in  
(A) Wyanad (B) Alappuzha  
(C) Thiruvananthapuram (D) Kollam

A

3

**132/2017**  
**[P.T.O.]**

11. The first floating ATM in Kerala is started in  
(A) Ernakulum (B) Thiruvananthapuram  
(C) Thrissur (D) Calicut
12. Almost 68% of the total area of Kerala is \_\_\_\_\_ soil group.  
(A) laterite (B) red  
(C) black (D) alluvial
13. Which river in Kerala is known as 'Baris' in ancient days ?  
(A) Pamba (B) Bharatapuzha  
(C) Periyar (D) Chandragiri
14. Who is known as 'Father of Modern Kerala Renaissance' ?  
(A) Sri Narayana Guru (B) Chattampi Swamikal  
(C) Ayyankali (D) Vagbhadananda
15. Who called Ayyankali as 'Pulayaraja' ?  
(A) Jawaharlal Nehru (B) Indira Gandhi  
(C) Mahatma Gandhi (D) E.K. Nayanar
16. Who is the returning officer for the election to Vice President of India ?  
(A) Attorney General of India  
(B) Chief Election Commissioner  
(C) Secretary Lok Sabha / Rajya Sabha  
(D) Chief Justice of India
17. World Athletic meet 2017 take place at  
(A) London (B) Tokyo  
(C) Helsinki (D) Rio-de-Janeiro
18. Who is the French President ?  
(A) Tony Blair (B) Emmanuel Mucro  
(C) Nawab Sharif (D) Samuel Mucro
19. In which year Olympics will take place in Los Angeles for the third time ?  
(A) 2024 (B) 2028  
(C) 2020 (D) 2027
20. Who is the Vice President of India ?  
(A) Dr. Hameed Ansari (B) Dr. Pranab Mukherjee  
(C) Venkaiyya Naidu (D) Ramnath Kovind

21. What thickness of metal sheets are called as plates ?  
 (A) Above 3 mm (B) Above 5 mm  
 (C) Above 7 mm (D) Above 10 mm
22. What gases are used for the application under water gas cutting of steel ?  
 (A) Oxygen-coal (B) Oxygen-LPG  
 (C) Oxygen-Hydrogen (D) Oxygen-Acetylene
23. In which gas welding technique the blow pipe and filler rod angles are 50 and 40 respectively with the welding line ?  
 (A) Rightward (B) Leftward  
 (C) Rightward and Leftward (D) All of these
24. Soldering & Brazing are the example of non-fusion welding  
 (A) Fusion welding (B) Non-fusion welding  
 (C) Pressure welding (D) Forge welding
25. Which type of artificial respiration method must not be used for the victim has injuries to the chest and belly ?  
 (A) Mouth to mouth method  
 (B) Schafer's method  
 (C) Nelson's arm – lift back – pressure method  
 (D) Mouth to nose method
26. Metering device used in car air-conditioner  
 (A) Electronic expansion valve (B) Automatic expansion valve  
 (C) Capillary tube (D) Thermostatic expansion valve
27. VRV stands for \_\_\_\_\_  
 (A) Varying Recirculated Volume (B) Variable Refrigerant Volume  
 (C) Varying Refrigerant Volume (D) None of these
28. The package AC comes in capacity \_\_\_\_\_.  
 (A) less than 2 TR (B) between 2 to 4 TR  
 (C) between 5 to 15 TR (D) more than 25 TR
29. Rawl plug tool is used for making \_\_\_\_\_.  
 (A) Bending (B) Grinding  
 (C) Cutting (D) Hole

30. Commercial reciprocating compressor lubricated by  
 (A) Forced feed (B) Splash lubrication  
 (C) Machine lubrication (D) None of the above
31. Centrifugal switch disconnected after the rotor has reached \_\_\_\_\_ of the rated speed.  
 (A) 50 to 55% (B) 55 to 60%  
 (C) 70 to 75% (D) 75 to 80%
32. Why is three phase induction motor self starting ?  
 (A) phase angle difference  $60^\circ$   
 (B) phase angle difference  $180^\circ$   
 (C) phase angle difference  $90^\circ$   
 (D) phase angle difference  $120^\circ$
33. Standard atmospheric pressure is  
 (A) 1.0332 kg f/sq.cm. (B) 1.332 kg f/sq.cm.  
 (C) 2.0332 kg f/sq.cm. (D) All the above
34. Chemical formulae of R-600 a  
 (A)  $C_5H_{12}$  (B)  $C_2H_6$   
 (C)  $C_3H_8$  (D)  $C_4H_{10}$
35. What is general chemical formula for finding Refrigerant Numbering ?  
 (A)  $C_m H_n Cl_p F_q$  and  $n + p + q = 2p + 2$   
 (B)  $C_m H_n Cl_p F_q$  and  $n + p + q = 2m + 2$   
 (C)  $C_m H_n Cl_p F_q$  and  $n + p + q = 2n + 2$   
 (D)  $C_m H_n Cl_p F_q$  and  $n + p + q = 2q + 2$
36. What is the colour code of Refrigerant 410 A ?  
 (A) Rose (B) Orange  
 (C) Chocolate Brown (D) Coral Red
37. The various methods of duct design are \_\_\_\_\_  
 (A) Equal friction method (B) Velocity reduction method  
 (C) Static regain method (D) All of these

38. 'HEPA' stands for \_\_\_\_\_.
- (A) High Energy Particulate Air
  - (B) High Efficiency Particulate Air
  - (C) High Entry Particulate Air
  - (D) Highly Effective Pressurized Air
39. As the engine speed decreases, the cooling capacity of the car AC system \_\_\_\_\_.
- (A) increases
  - (B) remains unchanged
  - (C) decreases
  - (D) may increase or decrease depending on number of persons travelling in car
40. Refrigerant 407 C is combination of \_\_\_\_\_.
- (A) R-290 & R-1270
  - (B) R-600a & R-134a
  - (C) R-125, R-600 & R-134a
  - (D) R-32, R-125 & R-134a
41. What is temperature of Neutral flame in Oxy-Acetylene Brazing set ?
- (A) 2200 °C
  - (B) 3200 °C
  - (C) 4200 °C
  - (D) 5200 °C
42. 1 micron = \_\_\_\_\_ millimetre of Hg.
- (A) 1/100
  - (B) 1/1000
  - (C) 1/10000
  - (D) 1/10
43. Azeotropic Mixtures are designed by \_\_\_\_\_ series.
- (A) 500
  - (B) 400
  - (C) 700
  - (D) 600
44. How are the reciprocating compressor classified depending on working ?
- (A) Vertical & Horizontal
  - (B) Single & Double acting
  - (C) Open type & Semi sealed
  - (D) Semi & Hermetically sealed
45. GWP of R-11 is
- (A) 8500
  - (B) 5400
  - (C) 4500
  - (D) 1800

46. How much air is normally required for the working of air-cooled condenser per ton of refrigeration ?
- (A) 50 to 55 cu.m/min. (B) 30 to 35 cu.m/min.  
(C) 20 to 25 cu.m/min. (D) 60 to 65 cu.m/min.
47. The thermistors are \_\_\_\_\_
- (A) pressure type temperature sensors  
(B) bellow type temperature sensors  
(C) resistance type temperature sensors  
(D) all of the above
48. What are the examples of non-fusion welding ?
- (A) Arc welding (B) Oxy-Acetylene welding  
(C) Soldering (D) None of the above
49. Alternative refrigerant of R-22
- (A) R-401 A (B) R-410 A  
(C) R-500 (D) R-507
50. Voltage rating of starting capacitor used in ACs
- (A) 410 V (B) 230 V  
(C) 440 V (D) 110 V
51. 50 °F is \_\_\_\_\_
- (A) 12.5 °C (B) 5 °C  
(C) 7.5 °C (D) 10 °C
52. What is a Rectifier ?
- (A) DC to AC converter (B) AC to DC converter  
(C) Both (A) and (B) possible (D) None of these
53. What is the voltage required for LED ?
- (A) 1.2 – 2.5 V (B) 2.2 – 3.5 V  
(C) 3.2 – 4.5 V (D) 4.2 – 5.5 V



54. How many diodes are there in a bridge rectifier ?  
(A) 2 (B) 3  
(C) 4 (D) 6
55. Which is the semi-conductor device with three terminals and used for amplifying electric and electronic signals ?  
(A) Diode (B) Transistor  
(C) Capacitor (D) Zener diode
56. What type of relay is used in RSIR ?  
(A) Voltage type relay (B) Hotwire relay  
(C) PTC relay (D) Current coil relay
57. The vapour pressure of refrigerant should be  
(A) lower than atmospheric pressure  
(B) higher than atmospheric pressure  
(C) equal to atmospheric pressure  
(D) none of the above
58. One of the purposes of sub-cooling the liquid refrigerant is to  
(A) reduce compressor over-heating  
(B) reduce compressor discharge temperature  
(C) increase cooling effect  
(D) ensure that only liquid and not the vapour enters the expansion valve
59. At lower temperatures and pressures, the latent heat of vaporisation of a refrigerant  
(A) decreases (B) increases  
(C) remains same (D) depends on other factors
60. For ammonia refrigerating systems, the tubes of a shell and tube condenser are made up of  
(A) Copper (B) Steel  
(C) Aluminium (D) Brass
61. The higher temperature in vapour compression cycle occurs at \_\_\_\_\_.  
(A) Receiver (B) Expansion valve  
(C) Condenser discharge (D) Compressor discharge

62. Latent heat of vaporization at 5 °F (Btu/lb) of R-134 a is \_\_\_\_\_.
- (A) 66.2 (B) 99.2  
(C) 103.3 (D) 89.3
63. The weight of HC charged to the system for drop in conversion from CFC 12 to HC is
- (A) 120% (B) 100%  
(C) 60% (D) 40%
64. Most of the refrigerants including CFCs, HCFcs, HFCs and HC blend are \_\_\_\_\_.
- (A) Non-toxic (B) Corrosive  
(C) High density (D) Non-flammable
65. A refrigerant recovery unit needs the filter drier change, approximately after \_\_\_\_\_.
- (A) 50 to 60 hours of operation  
(B) 100 hours of operation  
(C) every 24 hours  
(D) every time before recover refrigerants
66. The clearance between rotor and stator varies according to the \_\_\_\_\_.
- (A) Coil of the motor (B) Air passage  
(C) Cable size (D) Size of the motor
67. The ball bearing of electrical motor are lubricated by \_\_\_\_\_.
- (A) Oil (B) Grease  
(C) Air (D) Water
68. Which causes clogging at the expansion valve ?
- (A) Oil (B) Dust particles  
(C) Moisture (D) Impurities
69. The reason for the thermostat switch to become defective is \_\_\_\_\_.
- (A) Moisture in the system  
(B) Lack of lubrication oil to compressor  
(C) Carbon formation of contact points  
(D) OLP is not functioning

70. High pressure cut off is used to \_\_\_\_\_
- (A) cut off power supply to condenser fan motor if pressure increases beyond the preset value.
  - (B) cut off power supply to compressor motor if pressure increases beyond the preset value.
  - (C) cut off power supply to evaporator fan motor if pressure increases beyond the preset value.
  - (D) None of these
71. Air velocity is measured by \_\_\_\_\_.
- (A) Tachometer
  - (B) Anemometer
  - (C) Hydrometer
  - (D) Thermometer
72. The solenoid valve operated by \_\_\_\_\_.
- (A) Hand operated
  - (B) Oil pressure operated
  - (C) Gas pressure operated
  - (D) Electrically operated
73. Brine solution circulation pump consists of \_\_\_\_\_.
- (A) Piston type
  - (B) Gear type
  - (C) Rotary type
  - (D) Rotating vane type impeller
74. A water cooler is having 4 kg (weight) quantity of R-12, if you retrofit with HFC for the same machine. How much quantity is weight of 134a you will charge ?
- (A) 3.8 kgs.
  - (B) 3.2 kgs.
  - (C) 2.4 kgs.
  - (D) 1.6 kgs.
75. Ice cream storage plant thermostat thermal bulb is located \_\_\_\_\_.
- (A) near suction line
  - (B) at liquid line
  - (C) inside the storage compartment
  - (D) in brine solution
76. The function of duct in air conditioning unit is \_\_\_\_\_
- (A) Air cooling
  - (B) Air cleaning
  - (C) Air drying
  - (D) Air distributing

77. A cooling tower's warm water inlet temperature is 44 °C, sump water outlet temperature is 32 °C, surrounding air wet bulb temperature is 24 °C. Find out the efficiency of the cooling tower in percentage.
- (A) 60% (B) 40%  
(C) 80% (D) 75%
78. The cut-in and cut-out set pressure difference is called
- (A) set pressure (B) differential pressure  
(C) cut-out pressure (D) cut-in pressure
79. Compressor motor protected by the \_\_\_\_\_.
- (A) low pressure switch (B) overload protector  
(C) high pressure switch (D) temperature control
80. The purified, conditioned air improves the \_\_\_\_\_.
- (A) Breathing of human (B) Cleaning of AC room  
(C) Performance of the system (D) Quality of the air filters
81. Which instrument is used to measure relative humidity ?
- (A) Hydrometer (B) Psychrometer  
(C) Hygrometer (D) Thermometer
82. What is the purity of dry nitrogen for flushing ?
- (A) 10 ppm (B) 15 ppm  
(C) 3 ppm (D) 8 ppm
83. By using which valve in the charging line, the refrigerant can be recovered ?
- (A) Service valve (B) Hand shut off valve  
(C) Piercing valve (D) Double stage regulator
84. The relationship between rotor speed 'N', frequency 'f' and number of poles 'p' is given by relation
- (A)  $N = 120 f/p$  (B)  $PN = 120/p$   
(C)  $f = 120 N/p$  (D)  $N = 120 p/f$
85. A oil separator is necessary in discharge line to return the oil to the compressor in case of \_\_\_\_\_
- (A) R-290 (B) R-717  
(C) R-12 (D) R-600a

86. An evaporative condenser is a \_\_\_\_\_.
- (A) Air cooled condenser
  - (B) Water cooled condenser
  - (C) Both air and water cooled at the same time
  - (D) None of these
87. Approach of a cooling tower is defined as the
- (A) difference of dry bulb temperature of surrounding air and temperature of water leaving the cooling tower.
  - (B) difference of temperature of water leaving the cooling tower and wet bulb temperature of surrounding air.
  - (C) difference of temperature of water leaving the cooling tower and temperature of water entering the cooling tower.
  - (D) None of the above
88. In a induced draft cooling tower, the fan is fixed at the \_\_\_\_\_.
- (A) top of the cooling tower
  - (B) middle of the cooling tower
  - (C) bottom of the cooling tower
  - (D) any location of the cooling tower
89. A thermostatic expansion valve is based on the principle of maintaining a constant degree of superheat at the \_\_\_\_\_.
- (A) discharge of compressor
  - (B) exit of the condenser
  - (C) exit of capillary tube
  - (D) exit of evaporator
90. The eliminators at the air washers avoid the
- (A) Air flow
  - (B) Water particles in the air
  - (C) Water flow
  - (D) Dehumidification
91. External equalizer is used with \_\_\_\_\_
- (A) AEV
  - (B) TEV
  - (C) High side flat valve
  - (D) Low side flat valve
92. Normally pressure relief valves are mounted on \_\_\_\_\_ in a refrigeration plant.
- (A) compressor
  - (B) receiver
  - (C) condenser
  - (D) evaporator

93. The best refrigerant is one for which \_\_\_\_\_.
- (A) ODP = 1 (B) ODP = 0.5  
(C) ODP = 0.75 (D) ODP = 0
94. Relative COP = \_\_\_\_\_
- (A) Actual COP / Theoretical COP (B) Theoretical COP / Actual COP  
(C) Actual COP × Theoretical COP (D) None of these
95. The refrigerant after condensation process is cooled below the saturation temperature before throttling. Such a process is called
- (A) Sub-cooling (B) Super-cooling  
(C) Normal cooling (D) None of these
96. On P-H diagram, the isentropic compression process is represented by an
- (A) Inclined line (B) Vertical line  
(C) Horizontal line (D) Curved line
97. The super-heating in a refrigeration cycle
- (A) Does not alter COP (B) Increase COP  
(C) Decrease COP (D) None of these
98. How many numbers of orbits in the orbiting scroll of scroll compression process ?
- (A) Three (B) Four  
(C) Two (D) One
99. Most air cooled condensers are designed to operate with a temperature difference of
- (A) 6 °C (B) 9 °C  
(C) 14 °C (D) 24 °C
100. The centrifugal compressor are generally used for refrigerants that require
- (A) small displacements and low condensing pressure.  
(B) large displacements and high condensing pressure.  
(C) small displacements and high condensing pressure.  
(D) large displacements and low condensing pressure.

**SPACE FOR ROUGH WORK**

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