

CBSE Class 12 Air-Conditioning and Refrigeration 2025 - Set 351

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)



Time Allowed: 3 Hours

Maximum Marks: 60

General Instructions

- (i) Please read the instructions carefully.
- (ii) This question paper consists of 24 questions in two Sections: Section A and Section B.
- (iii) Section A has Objective Type Questions whereas Section B contains Subjective Type Questions.
- (iv) Out of the given $(6 + 18) = 24$ questions, a candidate has to answer $(6 + 11) = 17$ questions in the allotted maximum time of 3 hours.
- (v) All questions of a particular section must be attempted in the correct order.
- (vi) Section A: Objective Type Questions (30 marks). This section has 6 questions. There is no negative marking. Follow the instructions given; marks are mentioned against each question/part.
- (vii) Section B: Subjective Type Questions (30 marks). This section has 18 questions; answer 11. Follow the instructions given; marks are mentioned against each question/part.

Section A

1. Answer any 4 questions out of the given 6 questions on Employability Skills : ($4 \times 1 = 4$)

1(i). What is intrinsic motivation ?

1(ii). Write various types of spreadsheet.

1(iii). Who is an active listener ?

1(iv). Define entrepreneurship.

1(v). Mention any two ways to reduce the amount of waste generated.

1(vi). Write the steps to save a presentation.

2. Answer any 5 out of the given 7 questions : ($5 \times 1 = 5$)

2(i). It is not a water cooled condenser :

- | | |
|------------------------------|------------------------------|
| (A) Evaporative condenser | (B) Double tube condenser |
| (C) Shell and coil condenser | (D) Shell and tube condenser |

2(ii). It is a type of relay :

- | | |
|-----------------|-----------------|
| (A) H.P. cutout | (B) L.P. cutout |
| (C) Motor | (D) Hot wire |

2(iii). Brine is used as a secondary refrigerant in

- | | |
|----------------------------|---------------|
| (A) Domestic refrigerator | (B) Ice plant |
| (C) Window air conditioner | (D) Freezer |

2(iv). It starts operating when the pressure in the discharge line rises above a certain predetermined pressure.

- | | |
|------------------------|-----------------|
| (A) L.P. cutout | (B) Relay |
| (C) Overload protector | (D) H.P. cutout |

2(v). The evaporator generally used in wine cooling is

- | | |
|----------------------------|-------------------------------|
| (A) Double tube evaporator | (B) Shell and tube evaporator |
| (C) Plate evaporator | (D) Finned evaporator |

2(vi). It is not a mode of heat transfer :

- | | |
|----------------|------------------|
| (A) Convection | (B) Transmission |
| (C) Radiation | (D) Conduction |

2(vii). Heating of air, without any change in its specific humidity is known as

- | | |
|----------------------|----------------------|
| (A) Humidification | (B) Sensible cooling |
| (C) Sensible heating | (D) Dehumidification |

3. Answer any 6 out of the given 7 questions : ($6 \times 1 = 6$)

3(i). Removal of moisture from the air, without any change in its dry bulb temperature is known as

- | | |
|----------------------|----------------------|
| (A) Humidification | (B) Dehumidification |
| (C) Sensible cooling | (D) Sensible heating |

3(ii). Normally, the ducts used in air conditioning zones have a _____ shape.

- | | |
|-----------------|----------------|
| (A) Round | (B) Square |
| (C) Rectangular | (D) Elliptical |

3(iii). In a window air conditioner, _____ is used as a safety device.

- | | |
|------------------------|-----------------|
| (A) overload protector | (B) compressor |
| (C) receiver | (D) refrigerant |
-

3(iv). Dairy refrigeration includes

- | | |
|-----------------------|--------------------------------------|
| (A) Meat preservation | (B) Refrigeration of milk and butter |
| (C) Ice making | (D) Preserving potatoes |
-

3(v). Automatic expansion valve is also known as :

- | | |
|---------------------------------------|--------------------|
| (A) Thermostatic expansion valve | (B) Float valve |
| (C) Constant pressure expansion valve | (D) Capillary tube |
-

3(vi). Central air conditioning system is used for

- | | |
|---------------------------------|-----------------------------|
| (A) Year round air conditioning | (B) Summer air conditioning |
| (C) Winter air conditioning | (D) Dehumidification |
-

3(vii). Thermostatic expansion valve operates by responding to _____.

- | | |
|-----------------|-------------------------|
| (A) Load | (B) Degree of superheat |
| (C) Temperature | (D) Pressure |
-

4. Answer any **5** out of the given **6** questions : (5 × 1 = 5)

4(i). All pathogenic types of bacteria and nearly all other objectionable organisms in milk are killed by

- | | |
|-------------|--------------------|
| (A) Thawing | (B) Pasteurization |
| (C) Cooling | (D) Blending |
-

4(ii). The condenser used in a domestic refrigerator

- | | |
|----------------------------|---------------------------|
| (A) Water cooled condenser | (B) Evaporative condenser |
| (C) Air cooled condenser | (D) Double tube condenser |
-

4(iii). Which one of the following is not a type of a viscous filter ?

- | | |
|----------------------|---------------------------|
| (A) Dry type | (B) Automatic type |
| (C) Replaceable type | (D) Manually cleaned type |
-

4(iv). It starts operating when the pressure in the suction line falls below a pre-determined value

- | | |
|------------------------|-----------------|
| (A) Overload protector | (B) Relay |
| (C) L.P. cutout | (D) H.P. cutout |
-

4(v). Heat transfers through the metal wall of tubing by

- | | |
|----------------|------------------|
| (A) Radiation | (B) Conduction |
| (C) Convection | (D) Transmission |
-

4(vi). Chemicals like calcium chloride, silica gel and activated alumina are commonly used for the psychrometric process of

- | | |
|----------------------|----------------------|
| (A) Humidification | (B) Sensible cooling |
| (C) Dehumidification | (D) Sensible heating |
-

5. Answer any **5** out of the given **6** questions : (5 × 1 = 5)

5(i). The psychrometric process generally used in winter air conditioning is

- | | |
|----------------------------------|--------------------------------|
| (A) Cooling and dehumidification | (B) Dehumidification |
| (C) Sensible cooling | (D) Heating and humidification |
-

5(ii). The passage carrying conditioned air to the conditioned space is known as

- | | |
|-------------|----------|
| (A) Shaft | (B) Duct |
| (C) Channel | (D) Pipe |

5(iii). In a window air conditioner, _____ type of evaporator is used.

- | | |
|------------------------------|--------------------------|
| (A) Plate surface evaporator | (B) Bare-tube evaporator |
| (C) Finned evaporator | (D) Both (A) and (B) |

5(iv). The principle of evaporative cooling is not used in

- | | |
|-----------------|----------------------------|
| (A) Ice plant | (B) Dessert cooler |
| (C) Earthen pot | (D) Acetone poured on skin |

5(v). Which one of the following is not an air conditioning system ?

- | | |
|----------------------------|--------------------------------|
| (A) Unitary system | (B) Self-contained system |
| (C) Central station system | (D) Automatic expansion system |

5(vi). The fan which removes air or gases from a space by suction is

- | | |
|---------------|------------|
| (A) Exhauster | (B) Blower |
| (C) Washer | (D) Drier |

6. Answer any 5 out of the given 6 questions : (5 × 1 = 5)

6(i). The air supplied to the conditioned space is made free from all foreign matters such as dirt, fumes, smoke and harmful bacteria by _____.

- | | |
|--------------|-----------|
| (A) Filter | (B) Grill |
| (C) Register | (D) Fan |

6(ii). The refrigerant ammonia is

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|-----------|-----------|
| (A) R-717 | (B) R-134 |
| (C) R-718 | (D) R-152 |

6(iii). The relay which is connected in series with the running winding is

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|----------------------------|----------------------|
| (A) Voltage starting relay | (B) Hot wire relay |
| (C) Current starting relay | (D) Both (A) and (B) |

6(iv). The refrigerant R-22 is

- | | |
|----------------------------------|----------------------------------|
| (A) Monochloro trifluoro methane | (B) Dichloro difluoro methane |
| (C) Tetrachloro difluoro ethane | (D) Trichloro monofluoro methane |

6(v). This insulating material operates best in the temperature range of -200°C to 150°C :

- | | |
|----------------|---------------|
| (A) PUF | (B) Cellulose |
| (C) Glass wool | (D) Thermocol |

6(vi). In 'Shell and Tube' condenser

- | | |
|--|------------------------------------|
| (A) air flows through the tubes. | (B) water flows through the tubes. |
| (C) refrigerant flows through the tubes. | (D) water contained in the shell. |

Section B

Answer any **3** out of the given **5** questions on
Employability Skills in **20-30** words each : ($3 \times 2 = 6$)

7. Write any two barriers to active listening.
8. Give two examples of extrinsic motivation.
9. Write some components of a spreadsheet.
10. Mention the qualities of a successful entrepreneur.
11. Write any four advantages of green jobs.

Answer any **3** out of the given **5** questions in **20-30**
words each : ($3 \times 2 = 6$)

12. Describe the process of 'Chemical dehumidification'.
13. Describe the preservation of meat products.
14. What is a refrigerant ? Give two examples.
15. What do you understand by 'Heat Transfer' ?
Write the different modes of heat transfer.
16. Differentiate between Blower and Exhauster.

Answer any **2** out of the given **3** questions in **30-50**
words each : ($2 \times 3 = 6$)

17. Describe the psychrometric process used for 'summer air conditioning'.
18. What main points must be kept in view while designing the air distribution system of an air conditioning system ?
19. Write the properties of R-12.

Answer any **3** out of the given **5** questions in **50-80**
words each : ($3 \times 4 = 12$)

20. Explain the 'Radial Perimeter' duct system with the help of a diagram.
21. Explain the Unitary air conditioning system.
22. Draw the labelled layout of a cold storage plant.
23. Describe the importance of an overload protector with the help of a diagram.
24. Give an example of an eco-friendly refrigerant and also write its properties.

- End of Question Paper -