



# CBCS SCHEME

21AU581

USN

--	--	--	--	--	--	--	--	--	--

Question Paper Version : A

## Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Automotive Heating, Ventilation and Air Conditioning

Time: 1 hr.]

[Max. Marks: 50

### INSTRUCTIONS TO THE CANDIDATES

1. Answer all the fifty questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.
4. Darkening two circles for the same question makes the answer invalid.
5. Damaging/overwriting, using whiteners on the OMR sheets are strictly prohibited.

- 
1. Refrigeration capacity is measure in
    - a) kg
    - b) Centigrade
    - c) Tons
    - d) None of these
  2. What does a vapour absorption refrigerator use in the form of a refrigerant?
    - a) Freon
    - b) Ammonia
    - c) Aqua-Ammonia
    - d) Water
  3. One ton of refrigeration in S.I. unit is
    - a) 840 kJ/min
    - b) 21 kJ/unit
    - c) 21 kJ/unit
    - d) 420 kJ/unit
  4. At a domestic refrigerators back, the bank of tubes is known as
    - a) Evaporator tubes
    - b) Capillary tubes
    - c) Condensor tubes
    - d) Refrigerant cooling tubes
  5. The expansion device, in any refrigeration system, is connected between
    - a) Receiver and condensor
    - b) Compressor and condensor
    - c) Evaporator and receiver
    - d) Compressor and Evaporator
  6. In a vapour compression cycle, where do we find the lowest temperature?
    - a) Expansion valve
    - b) Condensor
    - c) Compressor
    - d) Evaporator

7. What is the pressure at a refrigerator's inlet known as?
  - a) Critical pressure
  - b) Discharge pressure
  - c) Back pressure
  - d) Suction pressure
8. Before entering the expansion or the throttle valve, a refrigerant's condition in any vapour compression system is,
  - a) Moist vapour
  - b) Dry vapour
  - c) Very wet vapour
  - d) High pressure saturated liquid
9. Which type of compressor is used in our domestic refrigerators?
  - a) Centrifugal
  - b) Miniatures sealed unit
  - c) Axial
  - d) Piston type reciprocating
10. Which of the following statement is wrong?
  - a) Logarithmic mean temperature difference is not equal to the arithmetic mean temperature difference.
  - b) The heat transfer in liquid and gases takes place according to convection
  - c) The amount of heat flow through a body depends upon the material of the body
  - d) The thermal conductivity of solid metals increases with rise in temperature
11. In a refrigerating machine, heat rejected is \_\_\_\_\_ heat absorbed
  - a) Greater than
  - b) Less than
  - c) Equal to
  - d) None of these
12. The optimum effective temperature for human comfort is
  - a) Lower in winter than in summer
  - b) Higher in winter than in summer
  - c) Same in winter and summer
  - d) Does not depend on season
13. For Ammonia refrigerating systems, the tubes of a shell and tube of condenser are made of
  - a) Steel
  - b) Copper
  - c) Aluminum
  - d) Brass
14. The heat transfer takes place according to
  - a) Second law of thermodynamics
  - b) First law of thermodynamics
  - c) Zeroth law of thermodynamics
  - d) Third Law of thermodynamics
15. During a refrigeration cycle, heat is rejected by the refrigerant in a
  - a) Condenser
  - b) Compressor
  - c) Evaporator
  - d) None of these

16. A refrigeration system
- a) Remove heat from a low temperature body and delivers it to a high temperature system
  - b) Remove heat from a high temperature body and delivers it to a low temperature body
  - c) Reject energy to a low temperature body
  - d) None of these
17. Which is not a components of vapour compression refrigeration cycle
- a) Condensor
  - b) Butterfly valve
  - c) Evaporator
  - d) All of these
18. The refrigerant enters the compressor at
- a) Low temperature and high pressure
  - b) Low temperature and low pressure
  - c) high temperature and high pressure
  - d) None of these
19. Factor which does not affect the volume of vapour pumped by the compressor
- a) Clearance volume
  - b) Compressor casing material
  - c) Pressure drop through discharge and suction values
  - d) Leakages of vapor along the piston
20. Which is not a type of refrigeration cycle
- a) Compression
  - b) Solidification
  - c) Absorption
  - d) Evaporative
21. The primary working fluid used for absorbing and transmitting heat in a refrigeration system
- a) Refrigerant
  - b) Oil
  - c) Reactant
  - d) Lubricant
22. Refrigerant absorb heat at low temperature and \_\_\_\_ pressure and release heat at higher temperature and pressure
- a) Low
  - b) High
  - c) Medium
  - d) Atmospheric
23. The thermodynamic efficiency of a refrigeration system depends mainly on its,
- a) Operating temperature
  - b) Operating pressure
  - c) Operating power
  - d) None of these



24. Those fluids, which are used directly as refrigerant
- Primary refrigerants
  - Secondary refrigerants
  - Normal refrigerants
  - None of these
25. Secondary refrigerants are also referred to as
- Antifreezes
  - Freezes
  - Coolant
  - None of these
26. Typically, refrigerants undergo phase-change during
- Evaporation
  - Evaporation and condensation
  - Condensation
  - None of these
27. Antifreezes are used when refrigeration is required at
- Zero temperature
  - Sub zero temperature
  - High temperature
  - None of these
28. The amount of heat required to convert a unit mass of liquid into a gaseous phase at constant temperature
- Latent heat of refrigeration
  - Latent heat of vaporization
  - Latent heat of miniaturization
  - None of these
29. Selection of refrigerant for a particular application is not based on
- Ozone depletion potential
  - Color depletion of tuber
  - Economics of production
  - Global warming potential
30. Preferable value of "Total equivalent warming Index" in point view of global warming is,
- High
  - Low
  - Medium
  - Zero
31. GWP stands for,
- Global wastage potential
  - Gas warming potential
  - Global warming potential
  - Global warning potential
32.  $\text{CH}_3\text{CH}_3$  is the chemical formula for
- Methane
  - Difluoroethane
  - Ethane
  - Hexafluoroethane

33. To conserve energy, selecting a refrigerant with larger vapor specific heat will help to minimize the  
a) Energy loss  
b) Power loss  
c) Degree of superheat  
d) Degree of super cooling
34. Which is the green house gas  
a)  $N_2$   
b)  $O_2$   
c)  $CH_4$   
d) Ar
35. R - 32 is a,  
a) HCFC refrigerant  
b) CFC refrigerant  
c) HFC refrigerant  
d) None of these
36. The amount of radiation mainly depends upon the  
a) Nature of the body  
b) Temperature of the body  
c) Type of surface of the body  
d) All of these
37. In general the degree of refrigerants hazard depends on  
a) Amount of refrigerants used v/s total space  
b) Types of occupancy  
c) odor of refrigerant  
d) All of these
38. Freon group of refrigerant are  
a) Nontoxic and Non-Inflammable  
b) Toxic and Non-Inflammable  
c) Toxic and Inflammable  
d) Non- Toxic and Inflammable
39. Which is the desirable physical property of refrigerant?  
a) Toxic  
b) Explosive  
c) High freezing point  
d) Low boiling point
40. Why CFC - 12 is not used now days as a refrigerant?  
a) Instable  
b) Low latent heat value  
c) Global warming  
d) Ozone depletion
41. The psychometric chart is usefull for  
a) Calculating the energy consumption of an HVAC system  
b) Determine the rate of heat transfer in a automobile  
c) Estimate the performance of a refrigeration system  
d) All of these
42. The wet bulb temperature is measured using  
a) A thermometer wrapped in a wet cloth  
b) A thermometer exposed directly to airflow  
c) A thermometer shielded from direct sunlight  
d) A thermometer inserted into a water bath

43. Which of the following is a measure of the moisture content of air?
- a) Relative humidity
  - b) Dry bulb temperature
  - c) Wet bulb temperature
  - d) Heat transfer through radiation
44. The term "Psychrometric" refers to the study of
- a) Air pressure variations
  - b) Thermal conductivity of materials
  - c) Properties of moist air
  - d) Heat transfer through radiation
45. As relative humidity increases, the difference between the dry bulb temperature and the wet bulb temperature
- a) Increases
  - b) Decreases
  - c) Remains constant
  - d) Cannot be determined
46. What is one of the primary processes of regular air conditioning maintenance?
- a) Increasing energy consumption
  - b) Reducing indoor air quality
  - c) Extending the lifespan of the system
  - d) Creating more noise pollution
47. What is the most likely cause, if an air conditioning system is blowing warm air instead of cold air?
- a) Low refrigerant levels
  - b) Dirty air filter
  - c) Faulty thermostat
  - d) Clogged condenser coils
48. Which of the following is a common sign that indicates the need for servicing the heat system?
- a) Warm air blowing from vents
  - b) Strong burning smell
  - c) Even heating throughout the house
  - d) Noisy operation
49. Which of the following methods is commonly used for detecting leaks in an air conditioning system?
- a) Pressure testing
  - b) Visual inspection
  - c) Listening for leaks
  - d) Smelling for refrigerant odor
50. What parameter is typically measured to assess the cooling performance of an air conditioning system?
- a) Airflow velocity
  - b) Ambient temperature
  - c) Refrigerant pressure
  - d) Temperature difference.

\*\*\*\*\*