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| | **AkhilBharatiya Maratha ShikshanParishad's**<br>**AnantraoPawar College of Engineering & Research** | |
| | **Record No.:** ADM/D/036B<br>**Revision: 00** | **DoI: 02/01/2023** |

# Internal Correspondence

**Class – Second Year**

**B.VOC –Refrigeration And Air Conditionning**

**Subject – RAC Standards**

**Subject Teacher- Prof. Mehtre V K**

**SYLLABUS –**

**Unit I**: National And International Standards For Heating, Ventilation And Air Conditioning Introduction: Meaning of IS, need of IS, international classification of standards for refrigeration and air conditioning, various national and international standards for heating, Procedure ventilation and air conditioning

**Unit II**: Organizations For Standardization Procedure of standard development, levels of standard, main standardization, organizations, i.e. ISO- international organization for standardization, IEC-international electro technical commission and others international and national organizations

**Unit III**: Global Warming Potential Existing Standards: Main technical standards relevant to HCFC phase-out and low GWP (Global Warming Potential) alternatives, ISO, IEC, ECS (European Committee for Electrical Technical Standardization)

**Unit IV**: Adoption of International Standards Adoption of International Standards at National Level: National standardization bodies, national ozone units, accreditation bodies, national RAC associations, the process of adoption

**Unit V**: Field Applications of RAC Use of International Standards: In designing of refrigeration and air conditioning equipment, selection of materials related to refrigeration and air conditioning, safety issues related to refrigeration and air conditioning, industrial and field applications.

**Reference Books:**

1. ISHRAE standard book for Refrigeration and Air Conditioning

2. ASHRE hand book for Refrigeration and Air Conditioning

3. Refrigeration and Air Conditioning, Sadhu Singh, Khanna Publishing House

4. International Standards in Refrigeration and Air Conditioning , UNEP (United Nations Environment Program) 4. Refrigeration and Air Conditioning data book, New Age International Publication

**University Examination pattern**

Insem exam –only First 2 units

Endsem exam –last 3 units

**Unit I**:

***National And International Standards For Heating, Ventilation And Air Conditioning Introduction: Meaning of IS, need of IS, international classification of standards for refrigeration and air conditioning, various national and international standards for heating, Procedure ventilation and air conditioning***

Q-1 What are the international standards for HVAC?

ANS- Common HVAC-related codes and standards include ASHRAE 90.1, ICC International Energy Conservation Code (IECC), NFPA 70 – National Electric Code (NEC), and UMC Uniform Mechanical Code (UMC). HVAC systems must adhere to these codes and standards in order to be considered safe, reliable, and energy efficient.

Q-2 What is heating ventilation and air conditioning introduction?

Heating, ventilation, and air conditioning (HVAC) is the use of various technologies to control the temperature, humidity, and purity of the air in an enclosed space. Its goal is to provide thermal comfort and acceptable indoor air quality.

Q-3 What is the importance of heating ventilation and air conditioning?

ANS- The main purposes of a Heating, Ventilation and Air-Conditioning (HVAC) system are to help maintain good indoor air quality (IAQ) through adequate ventilation with filtration and provide thermal comfort

Q-4 What is heating, ventilation, and air conditioning refrigeration technology?

ANS- Heating, Ventilation, Air Conditioning, and Refrigeration Technology – commonly known as HVAC-R – involves the design, repair, installation, and maintenance of heating, ventilation, cooling, and refrigeration equipment.

Q-5 What is the difference between heating, ventilation, and air conditioning?

ANS- In the air conditioning industry, the term HVAC is often used instead of AC. HVAC refers to heating, ventilation, and air conditioning, whereas AC simply refers to air conditioning. AC is generally used when referring to systems that are designed to cool the air in your home.

Q-6 What are the factors affecting heating ventilation and air conditioning HVAC system?

ANS- A comfortable atmosphere is just a broad phrase to sum up all the areas that an HVAC system has an impact on. These areas include dry bulb temperature, humidity, fresh air, air movement, and the level of noise.

Q-7 How does a HVAC system work?

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ANS- The important thing to know is that HVAC equipment moves air. In general, a system exists to move warm air elsewhere, either into the home or out of it. A home's air conditioner, heat pump, and furnace captures or creates the heat, then the blower and ductwork help to facilitate the movement.

Q-8 What is the most common type of heating, ventilation, and air conditioning system in which air is circulated through or around heating and cooling

ANS- Traditional split systems

Traditional split systems are the most common type of HVAC systems. They comprise two main parts: an indoor unit (like a furnace or air handler) and an outdoor unit (like an air conditioner or heat pump).

Q-9 What is the ISO standard for HVAC validation?

ANS- Requirements for compliance are found in ISO 14644-2. Statistical analysis for cleanroom parameters is encouraged as a tool for monitoring the cleanroom after certification to ensure compliance.

Q-10 What is IEC in HVAC?

ANS- IEC HVAC is a leading international environmental manufacturer that produces cabinet heaters and fan coil units for demanding industrial, commercial, and multifamily residents.

Q-11 What is the NFPA standard for HVAC?

ANS- NFPA 90A is the Standard for the Installation of Air-Conditioning and Ventilating Systems, and NFPA 90B is the Standard for the Installation of Warm Air Heating and Air-Conditioning Systems. Both standards address the construction, installation, operation, and maintenance of HVAC systems.

Q-12 What are ASHRAE standards for HVAC?

ANS- HVAC ASHRAE standards cover system design, equipment performance, indoor air quality, and energy conservation. These standards are continuously updated and revised to align with advancements in technology, scientific research, and best practices in the field.

Q-13 What is an IEC standard?

ANS- The International Electrotechnical Commission (IEC) headquartered in Geneva, Switzerland, is the organization that prepares and publishes international Standards for all electrical, electronic and related technologies.

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**Unit II**:

***Organizations For Standardization Procedure of standard development, levels of standard, main standardization, organizations, i.e. ISO- international organization for standardization, IEC-international electro technical commission and others international and national organizations***

Q-1 What is ISO International Organization for Standardization?

ANS- The International Organization for Standardization – better known as ISO – provides organizations with guidelines to consistently achieve universally recognized standards.

Q-2 What are the 7 principles of ISO standards?

ANS- Now let's begin with the 7 principles of ISO 9001, which are Customer Focus, Leadership, Engagement of People, Process Approach, Improvement, Evidence-Based Decision Making, and Relationship Management

Q-3 What is the primary purpose of International Organization for Standardization ISO ?

ANS- The International Organization for Standardization (ISO) is a non-governmental, independent international organization that creates standards to guarantee the effectiveness, efficiency, and quality of goods, services, and systems.

Q-4 What is the main aim of ISO?

ANS- The International Organization for Standardization (known as the ISO for short) is a global organization that works to provide standardization across an array of products and companies. Its main goal is to facilitate trade, but its focus is on process improvement, safety, and quality in several areas.

Q-5 What is an ISO example?

ANS- ISO 13485: Medical Devices. ISO/IEC 17025: Testing and Calibration Laboratories. ISO 20121: Sustainable Events. ISO 22000: Food Safety Management. ISO 26000: Social Responsibility.

Q-6 What is the basic concept of ISO?

ANS- ISO (International Organization for Standardization) is a worldwide federation of national standards bodies. ISO is a nongovernmental organization that comprises standards bodies from more than 160 countries, with one standards body representing each member country.

Q-7 What are the 3 key components of ISO?

ANS- It focuses on three key components: meeting customer requirements, continuous improvement, and implementation of the standard's requirements. Meeting customer requirements is essential for any organization's success.

Q-8 What are the 7 pillars of ISO?

ANS- Now let's begin with the 7 principles of ISO 9001, which are Customer Focus, Leadership, Engagement of People, Process Approach, Improvement, Evidence-Based Decision Making, and Relationship Management

Q-9 Why do we need national and international standards?

ANS- Standards help companies improve the quality and safety of products, services and systems. They also help to reduce compliance costs, cut red tape and speed up time to market. Standards remove unnecessary barriers to international trade, an important feature for Canadian businesses.

Q-10 What are the main reasons for adopting international standards?

ANS- Adoption and implementation of international standards supports the provision of high-quality financial information to stakeholders, investors and the public, which results in greater economic growth, development and accountability.

Q-11 What is the difference between IEC and ISO and EN?

ANS- ISO standards are standards developed by the standardisation institute ISO, and IEC standards are developed by the International Electrotechnical Commission (IEC). EN standards are usually ISO or IEC standards that the European Commission has harmonised.

**Unit III**:

***Global Warming Potential Existing Standards: Main technical standards relevant to HCFC phase-out and low GWP (Global Warming Potential) alternatives, ISO, IEC, ECS (European Committee for Electrical Technical Standardization)***

Q-1 Is HCFC banned in India?

ANS- On 31 December, 2019, as part of the Government's commitment for moving towards environment friendly technologies, in a significant first, the Ministry of Environment, Forest and Climate Change (MoEFCC) brought out a notification in the Gazette of India through which the issuance of import license for HCFC-141b

Q-2 What are low global warming potential alternatives to HCFCs?

ANS- The alternatives to HCFCs include 'ozone and climate friendly alternatives' such as natural refrigerants - hydrocarbons, ammonia and carbon dioxide; and lower global warming potential (GWP) HFCs, both saturated HFCs and unsaturated HFCs (HFOs).

Q-3 What is the global warming potential of HCFC-22?

ANS- Both HCFC-22 and HFC-134a are potent greenhouse gases, with global warming potentials (GWPs) of 1,760 and 1,300 on a 100-y time scale (2)

Q-4 Can HCFC replace CFC?

Ans- Because they still contain chlorine and have the potential to destroy stratospheric ozone, they are viewed only as temporary replacements for the CFCs.

Q-5 What are the different types of HCFCs?

Ans- Different HCFC solutions, usually blends, were designed for use in simple and direct (drop-in) retrofits of existing CFC equipment, such as R401A, R-401B, R-402A, R-402B, R-403B, R-408A, R-409A, R-416A, DI-36 and DI-44.

Q-6 How do HCFCs contribute to global warming?

ANS- Increasing attention is being given to the potential contributions of these compounds to global warming. CFCs, HCFCs and HFCs absorb infra-red radiation and thus are greenhouse gases that can exert an additional radiative forcing that tends to warm the climate.

Q-7 Is HCFC a greenhouse gas?

ANS- CFCs and HCFCs are also greenhouse gases; however, their contribution is not included here because they are being phased out under an international agreement called the Montreal Protocol

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Q-8 What is the formula for HCFC?

ANS- Hydro-chlorofluorocarbons (HCFCs): when derived from methane and ethane these compounds have the formula $CCl_mF_nH_{4-m-n}$ and $C_2Cl_xF_yH_{6-x-y}$, where m, n, x, and y are nonzero.

Q-9 What are the 5 main ozone-depleting sources?

ANS- These compounds contribute to ozone depletion, and are called ozone-depleting substances ( ODS. ODS include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, methyl bromide, carbon tetrachloride, hydrobromofluorocarbons, chlorobromomethane, and methyl chloroform.

Q-10 What are 4 examples of HCFC refrigerants?

ANS- HCFC Refrigerant: HCFC refers to the chemical composition of the refrigerant. Hydrochlorofluorocarbon indicates that the refrigerant is comprised of Hydrogen, Chlorine, Fluorine, and Carbon. Common HCFC refrigerants are R-22, R-123, R-124, and R-142b.

Q-11 What are the 5 causes of ozone layer?

ANS- Ozone Depleting Substances (ODS)

| **Ozone-Depleting Substances** | **Sources** |
|---|---|
| Chlorofluorocarbons (CFCs) | Refrigerators, air-conditioners, solvents, dry-cleaning agents, etc. |
| Halons | Fire-extinguishers |
| Carbon tetrachloride | Fire extinguishers, solvents |
| Methyl chloroform | Adhesives, aerosols |

**Unit IV**:

***Adoption of International Standards Adoption of International Standards at National Level: National standardization bodies, national ozone units, accreditation bodies, national RAC associations, the process of adoption***

Q-1 What are the main reasons for adopting international standards within the regulated environment?

ANS- Greater international consistency and ease of doing business. Enhanced cross-border capital, financial flows, investments. Greater financial stability

Q-2 What are the benefits of adopting international accounting standards?

ANS- **Advantages of IFRS in Enhancing Financial Comparability and Transparency**

Easy Comparison: ...
Facilitating International Acquisitions and Mergers: ...
Greater Flexibility in Accounting Practices: ...
Improved Transparency and Communication: ...
Easier Access to Capital Markets: ...
Reduced Costs: ...
Enhanced Career Opportunities

Q-3 What are the four principles of IFRS?

ANS- IFRS insists on four key principles for preparing financial statements: clarity, relevance, reliability, and comparability. Clarity means making financial statements easy to read and understand

Q-4 What is the purpose of the International Organization for Standardization?

ANS- The ISO plays an important role in facilitating world trade by providing common standards among different countries. These standards are intended to ensure that products and services are safe, reliable, and of good quality.

Q-5 What are the benefits of international regulations?

ANS- An international legal framework on social standards ensures a level playing field in the global economy. It helps governments and employers to avoid the temptation of lowering labour standards in the hope that this could give them a greater comparative advantage in international trade.

Q-6 What are the advantages of international system?

ANS- The greatest advantage of SI is that it has only one unit for each quantity. It is never necessary to convert from one unit to another (within the system) and there are no conversion factors for students to memorize. These units are globally accepted so we can use them wherever we go around the world

Q-7 What are the types of international systems?

ANS- **10 benefits of international trade**

- Increased revenues. ...
- Decreased competition. ...
- Longer product lifespan. ...
- Easier cash flow management. ...

- Better risk management. ...
- Benefiting from currency exchange. ...
- Access to export financing. ...
- Disposal of surplus goods.

Q-8 What are the principles of international trade?

ANS- The principles of international trade agreements include non-discrimination, reciprocity, binding and enforceable commitments, transparency, and safety nets. These principles ensure fair competition, protect intellectual property, and promote economic cooperation and stability.

Q-9 What are the 5 principles of the WTO?

ANS- The WTO approaches are built on five principles namely non discrimination, reciprocity, binding and enforceable commitments, transparency and safety values.

Q-10 What are the 5 objectives of WTO?

ANS- The WTO has FIVE key objectives: (1) to set and enforce rules for international trade, (2) to provide a forum for negotiating and monitoring further trade liberalization, (3) to resolve trade disputes, (4) to increase the transparency of decision-making processes, (5) to cooperate with other major international economic

**Unit V**:

***Field Applications of RAC Use of International Standards: In designing of refrigeration and air conditioning equipment, selection of materials related to refrigeration and air conditioning, safety issues related to refrigeration and air conditioning, industrial and field applications.***

Q-1 What is the application of RAC?

ANS-Real Application Clusters. Oracle Real Application Clusters (RAC) allow customers to run a single Oracle Database across multiple servers in order to maximize availability and enable horizontal scalability, while accessing shared storage.

Q-2 What are the applications of refrigeration and air conditioning system?

ANS-The standard uses include refrigerators, freezers cold rooms, refrigerated trucks and industrial process such as food preservation pharmaceutical processing laboratories etc. Used more often in the residential, business and industry for comfort cooling room conditioning.

Q-3What is the importance of RAC?

ANS-The goal of the recovery audit program is to identify improper payments made on claims for services provided to Medicare beneficiaries. Improper payments may be overpayments or underpayments. Overpayments can occur when health care providers submit claims that do not meet CMS coding or medical necessity policies.

Q-4What is the principle and applications of air conditioning?

ANS-The basic principle of an air conditioner is a vapor compression cycle to minimize the air temperature with the help of a condenser, compressor, expansion valve, and evaporator. The complete cooling process is a heat transfer between the room air and refrigerant gas

Q-5What is a RAC-aware application?

ANS-From my undestanding, a "RAC aware" application is an application which will be deployed and using an Oracle RAC environment. For clustered environments, sometimes applications need to take some special considerations, that will vary between providers.

Q-6What is the RAC process?

ANS-RACs perform automated reviews when. improper payment is obvious. ● In the case of claims that are likely, to contain. errors, the RAC requests medical records from the provider to further review the claims (called a complex review).

Q-7What is the activation of RAC?

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ANS-The activation of Rac is mediated by an association of UNC-40 (DCC) with two guanine-nucleotide-exchange factors (GEFs), UNC-73 (Trio) and CED-5 (dedicator of cytokinesis [DOCK180]) [44,45], which are responsible for switching the inactive guanosine diphosphate-bound Rac GTPase to the active GTP-bound form.

Q-8What are the applications of refrigeration and air conditioning system?

ANS-The standard uses include refrigerators, freezers cold rooms, refrigerated trucks and industrial process such as food preservation pharmaceutical processing laboratories etc. Used more often in the residential, business and industry for comfort cooling room conditioning.

Q-9What is the unit of refrigeration?

ANS-Unit of refrigeration: Unit of refrigeration is TR (Ton of refrigeration). It is the amount of heat which is required to extract from one tonne of water at 0°C in order to convert it into equivalent ice at 0°C in a day. 1 TR = 3.5 kW = 210 kJ/min = 50 kcal/min

Q-10How to check fridge temperature?

ANS-An appliance thermometer will tell you if the food is at a safe temperature. Keep appliance thermometers in the refrigerator and freezer at all times. When the power is out, an appliance thermometer will always indicate the temperature in the refrigerator and freezer no matter how long the power has been out.

# MCQ ON RAC

1)What is Refrigeration?
**a) Refrigeration is the process of removing heat from a substance and cooling it to a temperature or below the actual temperature**
b) Refrigeration is the process of adding heat from a substance and cooling it to a temperature
c) Refrigeration is used to increase the level of humidity in the air by adding heat
d) None of the mentioned

2) How is the refrigerant used in the Air refrigeration cycle?
a**) In the compressor** b) In the condenser
c) Directly in contact d) Not used at all

3) Which of the following refers to the term C.O.P. of refrigeration?
a) Cooling for Performance **b) Coefficient of Performance**
c) Capacity of Performance d) Co-efficient of Plant

4) Which of the following is NOT the advantages of using a closed Air Refrigeration system?
a) Compact in construction **b) Lower coefficient of performance**
c) Lighter in weight d) Environmental Friendly

5) In lithium bromide absorption refrigeration system it is not necessary to keep the refrigeration temperature above 0°C.
**a) False** b) True

6) Which of the following is the S.I. unit to measure pressure in refrigeration?
a) Bar b) Newton c) Joule **d) Pascal**

7) Which of the following is the main disadvantage of natural refrigeration methods?
**a) natural refrigeration methods are dependent on local conditions**
b) natural refrigeration methods are not environment friendly
c) natural refrigeration methods are expensive
d) natural refrigeration methods are poisonous

8) Which of the following is the result of a reduction in operating pressure in the Air refrigeration cycle?
a) decrease in C.O.P.= b) always decreases **c) increase in C.O.P.** d) no change in C.O.P.

9) Which of the following is the key difference between a simple VAR and Electrolux refrigerator?
a) Working mechanism b) Generator c) Absorber **d) Liquid pump**

10. Efficiency of the Refrigerator is _____ to the C.O.P of the refrigerator.
**a) independent** b) directly proportional c) inversely proportional d) equal

11. Which of the following will be the value of Refrigeration effect if $m_2$ = 2 kg/min, $m_3$ = 0.8 kg/min and enthalpies for the refrigerant at saturated vapor and saturated liquid line are 1420 and 1260 kJ/kg?
a) 129 b) 196 c) 194 **d) 192**

12. Which of the following of the refrigerant is used as a refrigerant in Lithium Bromide Absorption Refrigeration system?
a) Lithium Bromide b) Hydrogen **c) Water** d) Ammonia

13. Which of the following refrigerants are used in Electrolux and Li-Br water refrigeration system?
a) Water and Bromide **b) Ammonia and Water** c) Ammonia and Lithium

d) Water and Water

14. Which of the following will be the value of Refrigeration effect if $m_1$ = 4 kg/min, and enthalpies for the point 1, 2, 4, 5, 9 are 1350, 1550, 1480, 1620, and 280 kJ/kg. If the refrigeration effect is 4280 kJ/min and work done is 15 kW, then what is the value of C.O.P.?
**a) 4.75** b) 6.00 c) 5.50 d) 4.85

15. Which of the following is the common application of Air standard refrigeration system?
a) Cold storage
b) Car air conditioning system
c) Domestic refrigerators
**d) Aircraft air conditioning**

16. What is Air Conditioning?
a) Air Conditioning is the process of adding heat and increasing the humidity
closed

**b) Air Conditioning is the process of removing heat and controlling the humidity of air in a space**
c) Air conditioning is the process of controlling air moisture in an open area by adding heat
d) None of the mentioned

17. Which of the following process is used in winter air conditioning?
a) Cooling and Dehumidification
**b) Heating and Humidification**
c) Dehumidification
d) Humidification

18. On which of the following cycle the air conditioning systems are based in transport aviation?
a) Reversed Joule's cycle
b) Otto cycle
c) Reversed Carnot cycle
**d) Reversed Brayton cycle**

19. Which of the following process is used in summer air conditioning?
a) Heating and Humidification
**b) Cooling and Dehumidification**
c) Humidification
d) Dehumidification

20. If the Coefficient of performance of a heat pump is 5, then what is the value of the Coefficient of performance of the refrigerator operating under the same conditions?
a) 0.2
b) 3
**c) 4**
d) 6

21. How is the cascade system achieved?
a) VCR system in a parallel combination
**b) VCR system in a series combination**
c) VAR system in a series combination
d) VAR system in a parallel combination

22. Dense air Bell-Coleman refrigerator is preferred over open cycle air refrigerator.
a) False
**b) True**

23. In which of the following Capillary tube is used in as an expansion device?
a) Room air conditioners
b) Water coolers
c) Domestic refrigerators
**d) All of the mentioned**

24. Which of the following uses natural convection air-cooled condensers?
a) High capacity room air conditioners
b) Industrial air conditioners
**c) Domestic refrigerators**
d) High capacity water coolers

25. Which of the following is the material of tubes used for shell and tube condenser in ammonia **refrigeration** system?
a) Copper

**b) Steel**
c) Brass
d) Aluminum

26. Which of the following represents sensible cooling on the psychrometric chart?
a) Inclined line
b) Curve
**c) Horizontal line**
d) Vertical line

27. Which of the following is the major equipment in the simplest form is used to do saturation of air?
a) Pipe
b) Chamber
c) Vessel
**d) Insulated Chamber**

28. Why is the evaporator used?
**a) To absorb heat**
b) To decrease the refrigeration effect
c) To reject heat
d) To improve C.O.P.

29. Which of the following refrigerants is having the lowest C.O.P for refrigeration system working under the temperature limits of -15°C and 30°C as evaporator and condenser temperature respectively?
a) R – 12
b) Carbon dioxide
c) Ammonia
**d) R – 30**

30. Which of the following type of refrigerants take a direct part in the refrigeration system?
**a) Primary**
b) Secondary
c) Tertiary
d) Mixed

**31).** The temperature of the dry bulb _____ during the process of heating and dehumidification.

**a. Increases**

b. Decreases

c. Remains Constant

d. Cannot be Determined

**32.** A typical refrigeration cycle would operate between a +27°C condenser temperature and a -23°C evaporator temperature. Here, what would be the performance of the cycle's Carnot coefficient?

a. 6

**b. 5**

c. 1.2

d. 0.2

**33).** Which of these increases during the process of humidification?

a. Specific humidity

b. Dry bulb temperature

**c. Relative humidity**

d. Wet-bulb temperature

**34).** What does a vapour absorption refrigerator use in the form of a refrigerant?

**a. Aqua-ammonia**

b. Freon

c. Ammonia

d. Water

**35).** One ton of refrigeration in the S.J. unit is:

a. 840 kJ/min  b. 420 kJ/unit  c. 21 kJ/unit  **d. 210 kJ/unit**

**36).** At a domestic refrigerator's back, the bank of tubes is known as:

a. Evaporator tubes **b. Condenser tubes** c. Capillary tubes d. Refrigerant cooling tubes

**37).** The expansion device, in any refrigeration system, is connected between:

a. Receiver and Condenser b. Compressor and Condenser

c. Compressor and Evaporator **d. Evaporator and Receiver**

**38).** What do we call the ratio of the actual mass of water present in an available volume of moist air to the total amount of water vapour present in the very same amount of saturated air present in the same pressure and temperature?

a. Degree of saturation b. Absolute humidity **c. Relative humidity** d. Humidity ratio

**39).** Which of these refrigerants is highly flammable and toxic?

a. R-12 b. Sulphur dioxide c. Carbon dioxide **d. Ammonia**

**40).** During the process of sensible heating of air, the wet-bulb temperature would be:

a. Decreases

b. Remains Constant

**c. Increases**

d. None of the above

**41).** What is the mixture of water vapour called when the maximum amount of water vapour has been diffused in the air?

a. Specific humidity **b. Saturated air** c. Moist air d. Dry air

**42).** In a vapour compression cycle, where do we find the lowest temperature?

**a. Evaporator** b. Condenser c. Expansion Valve d. Compressor

**43).** What is the pressure at a refrigerator's inlet known as?

a. Back Pressure b. Critical Pressure c. Discharge Pressure **d. Suction Pressure**

**44).** The ideal thermal efficiency of a reversible engine is 30%. The coefficient of performance, when we use it as a type of refrigerating machine with every other condition unchanged, will be:

a. 4.33 b. 3.33 **c. 2.33** d. 1.33

**45).** On the psychrometric chart, the marking of the alignment circle will be at:

a. 50% RH and 20°C DBT **b. 50% RH and 26°C DBT**

c. 60% RH and 20°C DBT d. 60% RH and 26°C DBT

**46).** Before entering the expansion or the throttle valve, a refrigerant's condition in any vapour compression system is:

a. Dry Vapour b. Very Wet Vapour

c**. High-Pressure Saturated Liquid** d. Moist Vapour

**47).** Which of these types of compressors are used in our domestic refrigerators?

a. Axial b. Centrifugal **c. Piston Type Reciprocating** d. Miniature Sealed Unit

**48).** Which of these is the refrigerant that has the highest critical pressure?

a. R-12 **b. Ammonia** c. R-11 d. R-22

**49)** The instruments pyrometer used for the measurements of ---

**a. high temperature** b. pressure c. volume d. entropy

50) In a refrigeration cycle, heat is rejected by the refrigerant in a

(a) expansion valve
**(b) condenser**
(c) compressor
(d) evaporator