

071304T4RAC

Refrigeration and Air Conditioning Artisan - Level 4

ENG/OS/RAC/CR/01/4

Install, Service and Repair Domestic Refrigeration Units

July/August 2023



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION  
COUNCIL (TVET CDACC)**

**WRITTEN ASSESSMENT**

**Time: 2 hours**

**INSTRUCTION TO CANDIDATES**

1. The paper consists of TWO sections A and B
2. Attempt ALL the questions.
3. You are provided with separate answer booklet
4. Do not write on the question paper
5. Mark for each question are indicated in brackets ( )

**This paper consists of FOUR (4) printed pages**

**Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing**

**SECTION A (10 MARKS)**

*Attempt ALL the questions from this section*

1. The thermostatic expansion valve operates on the changes in the \_\_\_\_\_
  - A. Degree of superheat at exit from the evaporator
  - B. Temperature of the evaporator
  - C. Pressure in the evaporator
  - D. Compressor failure
2. The condition of refrigerant after passing through the condenser in a vapour compression system is \_\_\_\_\_.
  - A. Saturated liquid
  - B. Wet vapour
  - C. Dry saturated vapour
  - D. Superheated vapour
3. In a refrigeration system, the refrigerant has the maximum temperature \_\_\_\_\_.
  - A. In evaporator
  - B. Before expansion valve
  - C. Between condenser and evaporator
  - D. Between compressor and condenser
4. Set of tubes with external fins placed at the back of the refrigerator is known as \_\_\_\_\_.
  - A. Evaporator
  - B. Compressor
  - C. Condenser
  - D. Expansion valve
5. \_\_\_\_\_ refrigerant is the primary medium used in gas processing.
  - A. Carbon dioxide
  - B. Ammonia
  - C. Propane
  - D. CFC
6. The capillary tube is not used in large capacity refrigeration systems because \_\_\_\_\_.
  - A. Cost is too high
  - B. Capacity control is not possible
  - C. It is made of copper
  - D. Required pressure drop cannot be achieved

7. Moisture in refrigeration system causes \_\_\_\_\_
  - A. Freezing at the expansion valve
  - B. Refrigerant over flow
  - C. Overheating of condenser
  - D. Over cooling
8. The vapor compression refrigerator employs the \_\_\_\_\_ cycle
  - A. Carnot
  - B. Reversed Rankine
  - C. Reversed Carnot
  - D. Rankine
9. In a refrigeration system, the expansion device is connected between the \_\_\_\_\_
  - A. Compressor and receiver
  - B. Condenser and receiver
  - C. Receiver and evaporator
  - D. Evaporator and compressor
10. Refrigerators work on the principle of \_\_\_\_\_
  - A. The zeroth law of thermodynamics
  - B. The first law of thermodynamics
  - C. The second law of thermodynamics
  - D. The third law of thermodynamics

**SECTION B (40MARKS)**

*Answer ALL questions in this section*

11. Explain when Wet bulb temperature is the temperature of air recorded by a thermometer. (2 Marks)
12. Name FOUR types of lubricants used in refrigeration systems (4 Marks)
13. There are numerous types of refrigerants used in *refrigeration* systems. Name TWO commonly used. (2 Marks)
14. There are several components used in refrigeration unit. With the aid of a well labelled diagram showing the components of refrigeration cycle. (5 Marks)
15. Outline FOUR appropriate properties of an ideal refrigerant (4 Marks)
16. In refrigeration, explain the purpose of a chiller. (2 Marks)
17. Explain the functions of an evaporator. (2 Marks)
18. Define the term refrigeration. (2 Marks)
19. Explain the effect of CFCs refrigerants on ozone layer. (2 Marks)
20. As a technical person, name FOUR factors to consider during procuring and installation of refrigeration units. (4 Marks)
21. List FOUR basic machine tools used in refrigeration repairs. (4 Marks)
22. Explain the importance of housekeeping in refrigeration workplace. (2 Marks)
23. Highlight THREE applications of hydrocarbon refrigerants in refrigeration systems. (3 Marks)
24. List TWO types of refrigeration units (2 Marks)