

071304T4RAC

Refrigeration and Air Conditioning Artisan - Level 4

ENG/OS/RAC/CR/01/4/A

Service and Repair Automobile Air Conditioning Systems

July/August 2023



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

**WRITTEN ASSESSMENT TOOL**

**Time: 2 hours**

***Instructions to Candidates***

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** the questions from both sections
3. You are provided with a separate answer booklet.
4. Do not write on the question paper.
5. Marks for each question are indicated in the 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)**

*Answer ALL questions*

1. Which among the following may not be necessary PPE when repairing an automobile air conditioning unit
  - A. Apron /dust coat
  - B. Gloves
  - C. Helmet
  - D. Safety boot
2. Where is the accumulator located in an automobile air conditioning system?
  - A. Between compressor and condenser
  - B. Between condenser and evaporator
  - C. Between evaporator and compressor
  - D. Between evaporator and receiver
3. The process of removing moisture from the automobile system is known as \_\_\_\_\_.
  - A. Flushing
  - B. Purging
  - C. Evacuating
  - D. Venting
4. Never fill refrigerant over \_\_\_\_\_ of capacity
  - A. 90%
  - B. 50%
  - C. 100%
  - D. 80%
5. \_\_\_\_\_ is not one among the basic type of compressors in general use in automobile air conditioning
  - A. Radial
  - B. Swash
  - C. Centrifugal
  - D. Scroll

6. The purpose of the expansion valve in an automobile air conditioning system is \_\_\_\_\_.
- A. To compress the refrigerant
  - B. To control the flow of refrigerant
  - C. To increase pressure of refrigerant
  - D. To equalize the pressure of refrigerant
7. \_\_\_\_\_ is an HFC refrigerant.
- A. R-114
  - B. R-134a
  - C. R-22
  - D. R-113
8. If the compressor discharge is unusually low, it may indicate \_\_\_\_\_.
- A. Too much refrigerant in the system
  - B. Too low refrigerant in the system
  - C. A blockage in the evaporator
  - D. A blockage in the condenser
9. The receiver drier is located in \_\_\_\_\_ of an automobile air conditioning unit
- A. Service line
  - B. Suction line
  - C. Discharge line
  - D. Liquid line
10. The word "ozone" describes \_\_\_\_\_.
- A. Thin layer in the earth's upper atmosphere
  - B. Protective layer of the earth
  - C. A filter of the sun ultraviolet rays
  - D. All of the above

**SECTION B: 40 MARKS**

*Answer ALL the questions in this section*

11. Outline FOUR possible reasons for insufficient cooling in an automobile air conditioning system. (4 marks)
12. Highlight THREE typical symptoms of refrigerant leak in an automobile air conditioning system. (3 marks)
13. State FIVE sensing devices found in an automobile air conditioning system. (5 marks)
14. Give TWO functions of an accumulator in an automobile air conditioning system. (2 marks)
15. State FOUR signs and symptoms of receiver drier failure (4 marks)
16. List FOUR equipment that are used in repairing and servicing of an automobile air conditioning system (4 marks)
17. State TWO safety precautions to be observed when handling refrigerant cylinders. (2 marks)
18. Identify THREE problems which indicates that automobile air conditioning unit needs refrigerant. (3 marks)
19. Highlight THREE precautions that should be taken during maintenance on automobile compressor. (3 marks)
20. State THREE major difficulties encountered in an automobile air conditioning system. (3 marks)
21. Highlight the main components of an automobile air conditioning system. (5 marks)
22. Give TWO reasons for excess charging (2 marks)