



UNIVERSITI KUALA LUMPUR
MALAYSIA FRANCE INSTITUTE

FINAL EXAMINATION
SEPTEMBER 2014 SESSION

SUBJECT CODE : FVD24603
SUBJECT TITLE : AUTOMOTIVE AIR CONDITIONING SYSTEM
LEVEL : DIPLOMA
DURATION : 12.45 PM – 3.15 PM
2.5 HOURS
DATE / TIME : 8 JANUARY 2015

INSTRUCTIONS TO CANDIDATES

- 1. Please read the instructions given in the question paper CAREFULLY.**
 - 2. This question paper is printed on ONE sides of the paper.**
 - 3. Please write your answers on the answer booklet provided.**
 - 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.**
 - 5. This question paper consists of TWO sections. Answer all question in Section A and TWO question in section B.**
 - 6. Answer all questions in English.**
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SECTION A (60 MARKS)**Answer ALL questions.****Question 1**

- (a) Define **OZONE**? (3 marks)
- (b) Describe the gas combination that **OZONE** contains. (3 marks)
- (c) List **TWO (2)** effects of the ozone depletion. (4 marks)
- (d) Name **THREE (3)** categories of Ultra Violet. (3 marks)
- (e) State why UV rays is dangerous to human being. (3 marks)
- (f) Explain the effects of global warming. (4 marks)

Question 2

- (a) List down **FIVE (5)** properties of refrigerant R134a. (5 marks)
- (b) List **FIVE (5)** advantages of R134a refrigerant gas which makes it much suitable for R12 replacement. (5 marks)
- (c) List the differences of refrigerant R12 compare to refrigerant R134a in term of reliability. (5 marks)
- (d) List down **FIVE (5)** safety precautions while handling refrigerant R12 refrigerant gas. (5 marks)

Question 3

- (a) Name **FIVE (5)** type of air conditioning compressor. (5 marks)
- (b) State the function of Thermal Expansion valve. (2 marks)
- (c) State the differences between the system that used TXV and the system that used fixed orifice tube. (5 marks)

Question 4

Explain the following terms:-

- (a) Latent heat (2 marks)
- (b) Sensitive/Sensible heat (2 marks)
- (c) Super heat (2 marks)

Question 5

Explain whether it is true that heat cannot be destroyed. (2 marks)

SECTION B (40 MARKS)

Answer TWO questions only.

Question 1

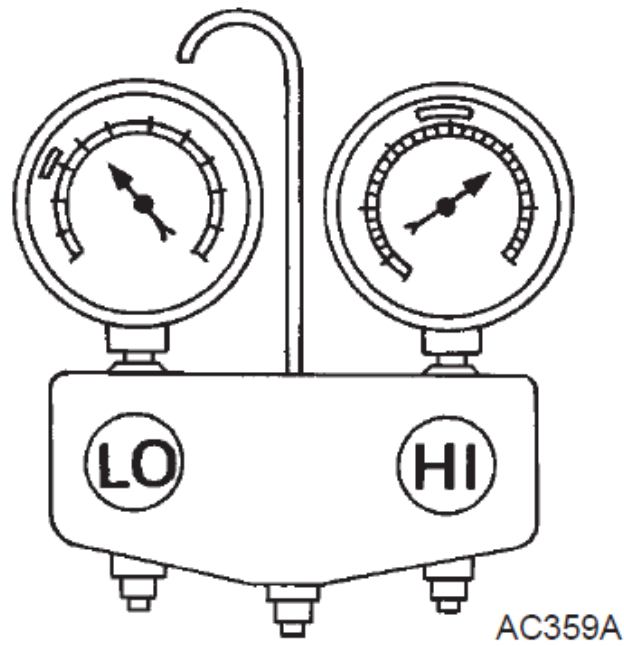


Figure 1: Both low and high side too high

The reading of a manifold gauge when connected to the refrigeration system is shown in figure 1 where the pressure on low pressure side and high pressure side become too high. From the above reading, explain the possible causes of the manifold gauge reading.

Question 2

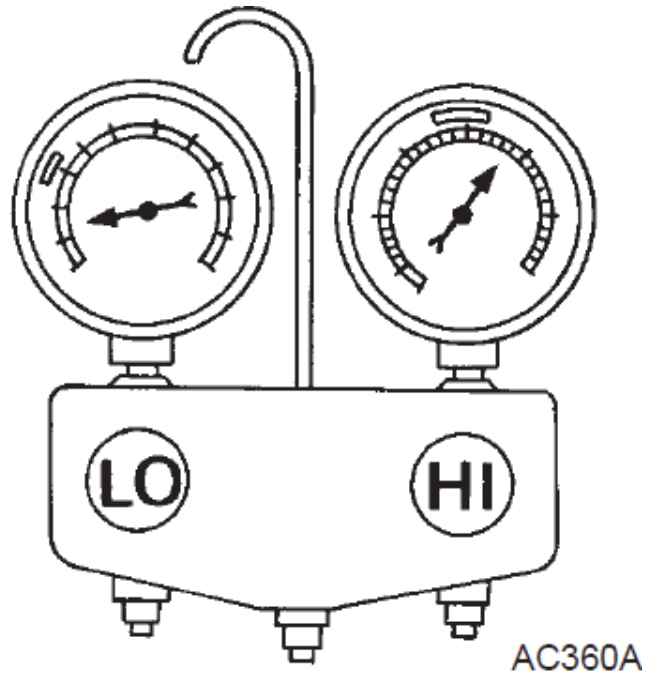


Figure 2: High pressure side is too high and low pressure side is too low

- (a) The reading of a manifold gauge when connected to the refrigeration system is shown in **figure 2** where the pressure on low pressure side is too low and high pressure side becomes too high.

From the above reading, explain the possible causes of the manifold gauge reading.

(16 marks)

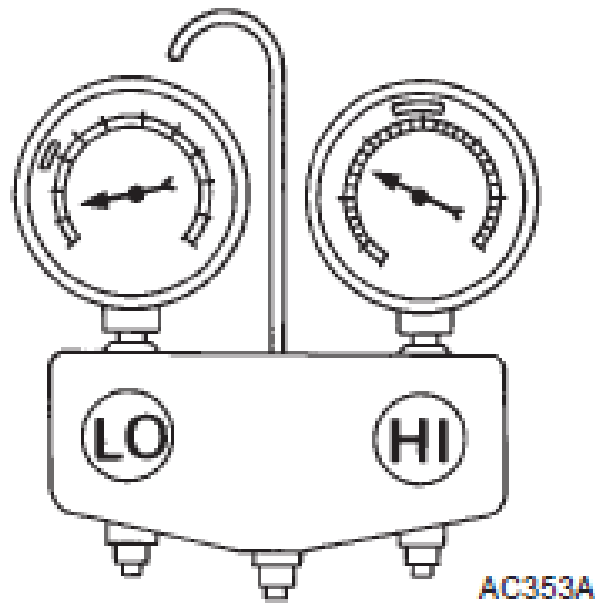


Figure 3: Both high and low pressure sides are low

- (b) The reading of a manifold gauge when connected to the refrigeration system is shown in **figure 3** where the pressure on low pressure side and high pressure sides are too low. From the above reading, explain the possible causes **AND** give the possible corrective action

(4 marks)

Question 3

- (a) Sketch an expansion valve and name the components. (10 marks)
- (b) State the operation of the expansion valve for the condition below: -
- i. When interior temperature in the vehicle is high. (3 marks)
 - ii. When interior temperature in the vehicle is low. (3 marks)
- (c) Some vehicles do not use an expansion valve, but they use a fixed orifice tube.
State the differences between these two systems. (4 marks)

END OF QUESTION