



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2011 SESSION

SUBJECT CODE : FCD 30103
SUBJECT TITLE : RAC SYSTEM STUDIES
LEVEL : DIPLOMA
TIME / DURATION : 9.00am – 12.00pm
(3 HOURS)
DATE : 05 MAY 2011

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both 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 (2) sections. Section A and B. Answer all questions in Section A. For Section B, answer two (2) question only.
6. Answer all questions in English.

THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

- (a) There are three (3) considerations that you must be alerted to while doing system selection such as System Constraint, Architectural Constraint and Financial Constraint. By using your own understanding, explain briefly all the consideration.

(5 marks)

- (b) In M & E drawing we have four (4) common types of drawing such as Shop Drawing, As Built Drawing, Detail Drawing and Schematic Drawing. Give the definition of Schematic Drawing complete with the sketches.

(10 marks)

Question 2

- (a) Unitary system is one of the systems in Air Conditioning.

i. Explain the definition of Unitary system

(7 marks)

ii. List down three (3) general categories in Unitary System.

(3 marks)

- (b) You have decided to use two pipe direct returns. After a month you realized that the problems were occurring in this system. What are the problem and how you can solve it?

(5 marks)

Question 3

Absorption Refrigeration Cycle

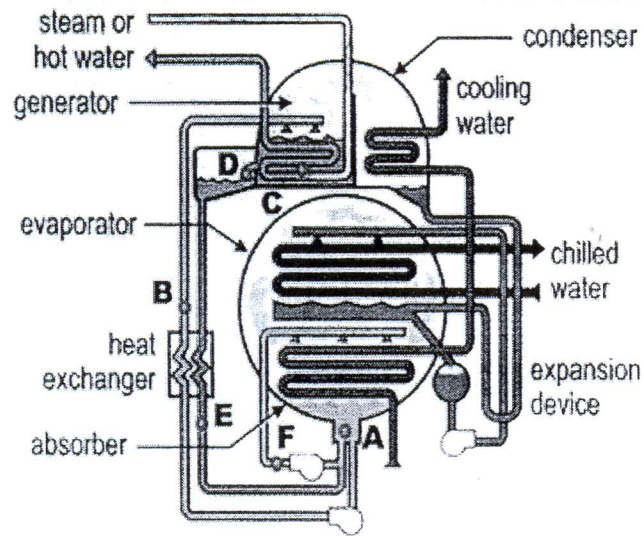


Figure Q3: Absorption Refrigerant Cycle

- (a) Referring to the Figure Q3, list down three (3) kinds of solutions present in an Absorption System. Describe further the characteristic of each kind of solution encountered.

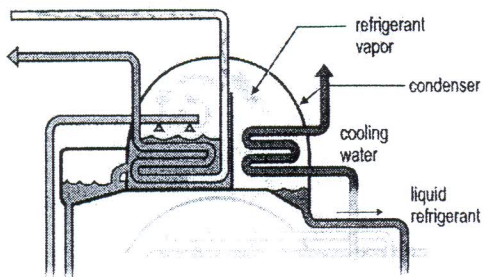
(10 marks)

- (b) Component and refrigerant are two different fundamental between Absorption Refrigerant Cycle and Vapor Compression Cycle. Explain it clearly.

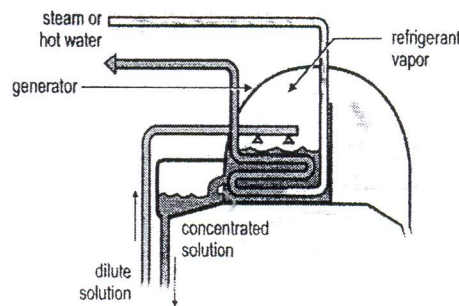
(5 marks)

Question 4

Condenser



Generator



Expansion Device

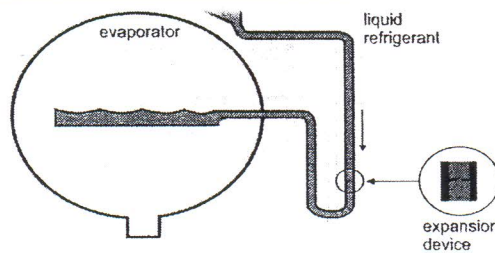


Figure Q4: Condenser, Generator, Expansion Device.

Figure Q4 above shows the components in Absorption Chiller. Explain the process involved in :

- i. Condenser
- ii. Generator
- iii. Expansion Device

(15 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer only TWO questions.

Please use the answer booklet provided.

Question 5

- (a) Air diffuser introduces air into conditioned space to obtain the desired indoor atmosphere environment.
- i. Describe three (3) types of supply air outlet complete with its example.
(6 marks)
 - ii. State four (4) important components for an air distribution system.
(2 marks)
- (b)
- i. List down three (3) methods of Evaporative Air Cooling Equipment.
(3 marks)
 - ii. Explain the process for the above listed types of Evaporative Air Cooling.
(9 marks)

Question 6

- (a) There are two (2) types of flow in a Cooling Tower such as Counter Flow and Cross Flow. Sketch and explain the process in Cross Flow type cooling tower.
(10 marks)
- (b) Give five (5) differences between Natural Draft Cooling Tower and Force Draft Cooling Tower.
(10 marks)

Question 7

- (a) Data below are the specification of parallel flow Heat Exchanger:

Cold flow enter at 308 K, C_c : 12,000 W/k
Hot flow enter at 433 K, C_h : 20,000 W/k
Heat Exchanger Area : 35 m²
Overall Heat Transfer Coefficient : 420 W/m².K
Effectiveness : 0.58

You are required to find:

- i. C_{max} and C_{min} (2 marks)
 - ii. NTU method value. (5 marks)
 - iii. No. of capacitance ratio, Cr (5 marks)
 - iv. Heat transfer in kW. (5 marks)
- (b) Give three (3) types of heat exchanger. (3 marks)

END OF QUESTION