SET A



UNIVERSITI KUALA LUMPUR Malaysia France Institute

FINAL EXAMINATION JANUARY 2010 SESSION

SUBJECT CODE

: FCB 20703

SUBJECT TITLE

: STUDY OF AIR CONDITIONING EQUIPMENT AND

SYSTEMS

LEVEL .

: BACHELOR

TIME / DURATION

: 9.00am - 12.00pm

(3 HOURS)

DATE

: 29 APRIL 2010

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 questions paper consists of THREE (3) questions. Answer ALL questions.
- 6. Answer ALL questions in English.

THERE ARE 4 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

Schematic of a direct fired LiBr/H₂O absorption system is given in Figure Q1.

- (a) Name the components marked from 1 until 15. Each correct answer is awarded two (2) marks.
- (b) Estimate the pressures in the two shells, given that the unit is used for air conditioning application (chilled water range: 7°C/13°C and cooling tower range: 29°C/35°C).

(5 marks)

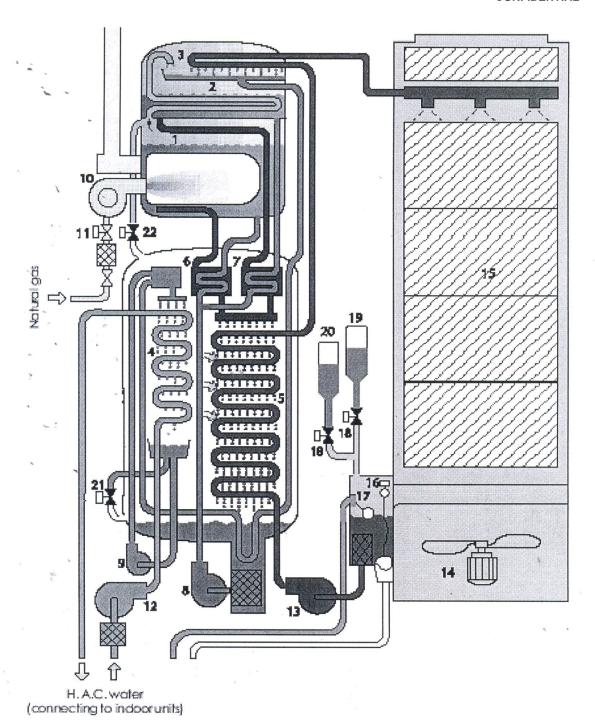


Figure Q1 Schematic of Direct Fired LiBr/ H_2O Absorption System

Question 2.

An Air Handling Unit (AHU) employing chilled water cooling has the following specification:

- (a) indoor design condition : 24 °C DB, 60 % RH
 - (b) outdoor condition: 32 °C DB, 80 % RH
 - (c) fresh air intake = 10% of supply air
 - (d) average temperature of cooling coil = 10.5 °C DB
 - (e) supply air temperature = 14 °C
 - (f) assume specific heat capacity for dry air at 14 °C = 1.02 kJ/kg K
 - (g) assume specific volume of dry air at room condition = 0.85 m³/kg
 - (h) room sensible cooling load = 110 Kw

Employing the Psychrometric chart provided,

a) plot the air conditioning process on the psychrometric chart

(20 marks)

b) calculate the supply air volume delivered to space in m³/s.

(15 marks)

Question 3

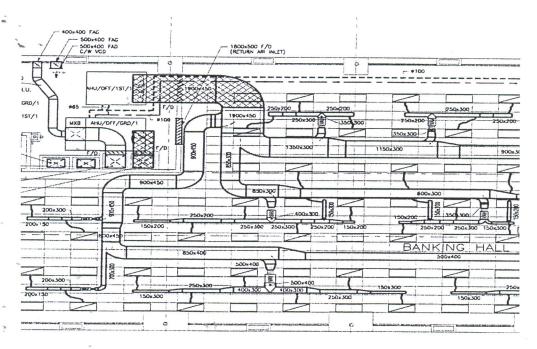


Figure Q3 Air conditioning System for Office Building.

- a) Name two (2) types of occupancies in any buildings and provide suitable examples. (5 Marks)
- b) You are working as a consulting engineer in an established consulting firm. Your client asked for a design criteria for air conditioning system for a high rise hotel. Give an example of a complete design criteria.

(5 Marks)

c) As a designer, what type of air conditioning system could you choose for a three-storey multi-tenant shop lots which require a cooling system? Explain why?

(10 Marks)

d) Name the type of air distribution system used in Figure Q3.

(10 Marks)

END OF QUESTIONS

APPENDIX

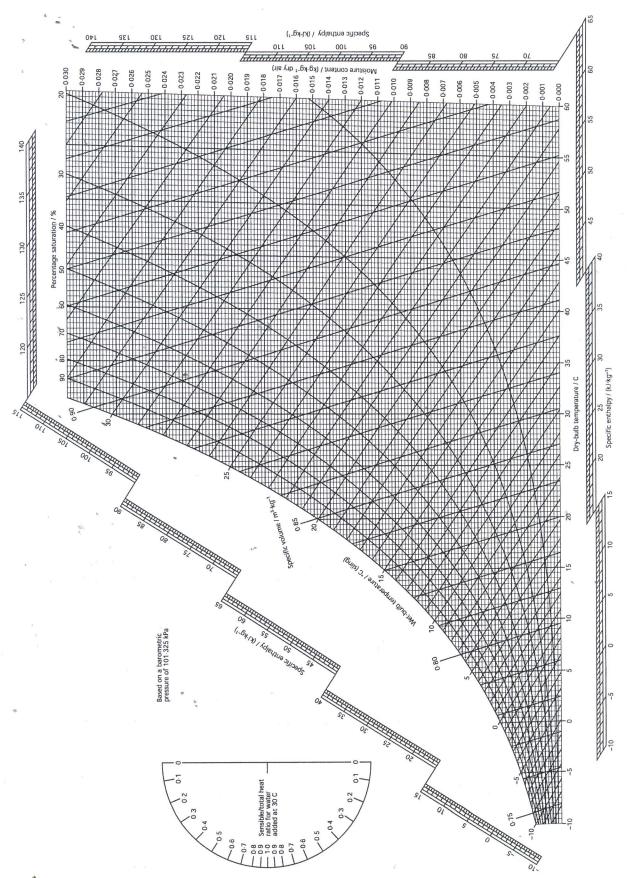


Figure C1.2 CIBSE psychrometric chart (-10 to +60 °C) (CIBSE Guide C includes charts for temperature ranges -10 to +60 °C and +10 to 110 °C)