



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.

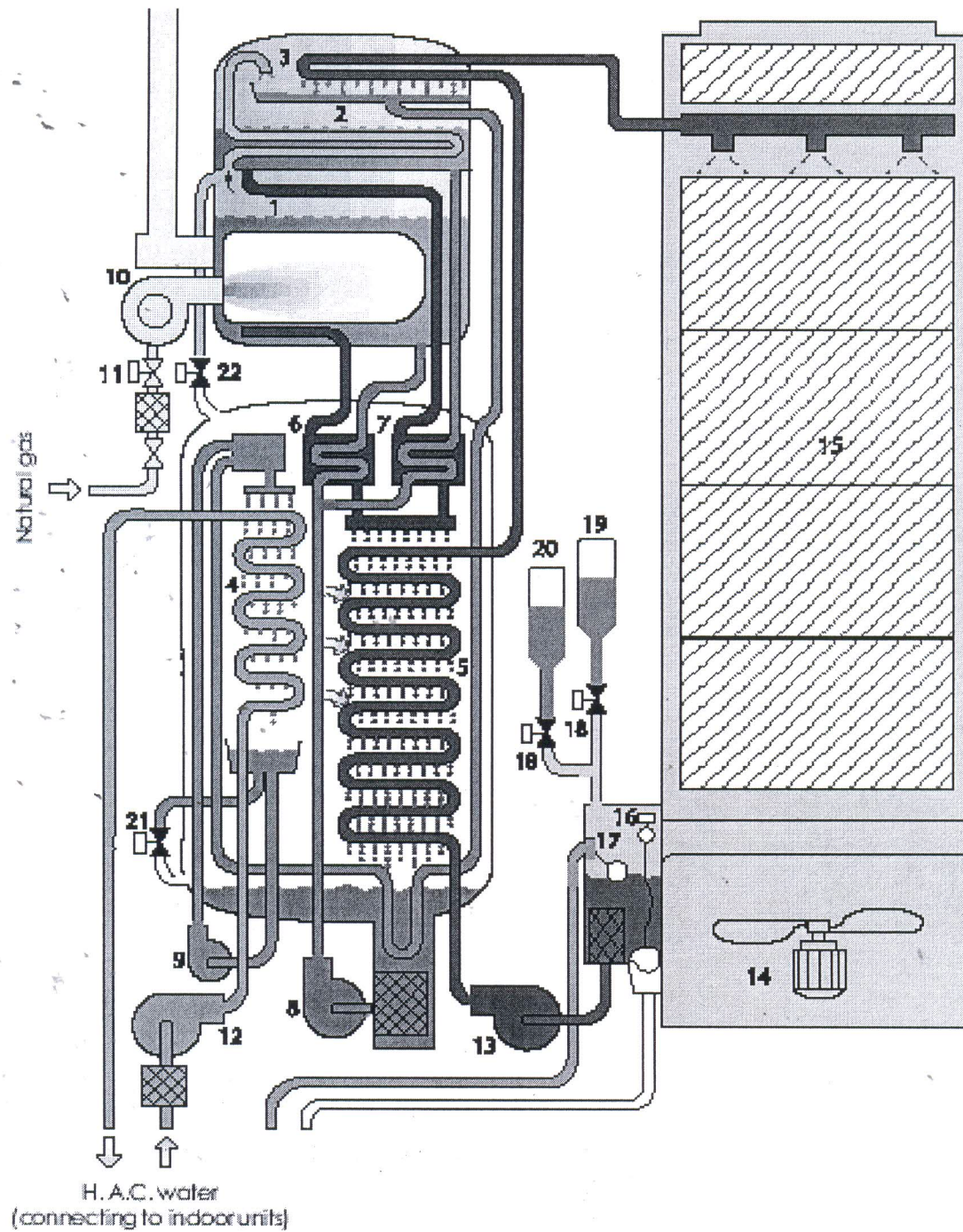
INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

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/H₂O 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)

APPENDIX

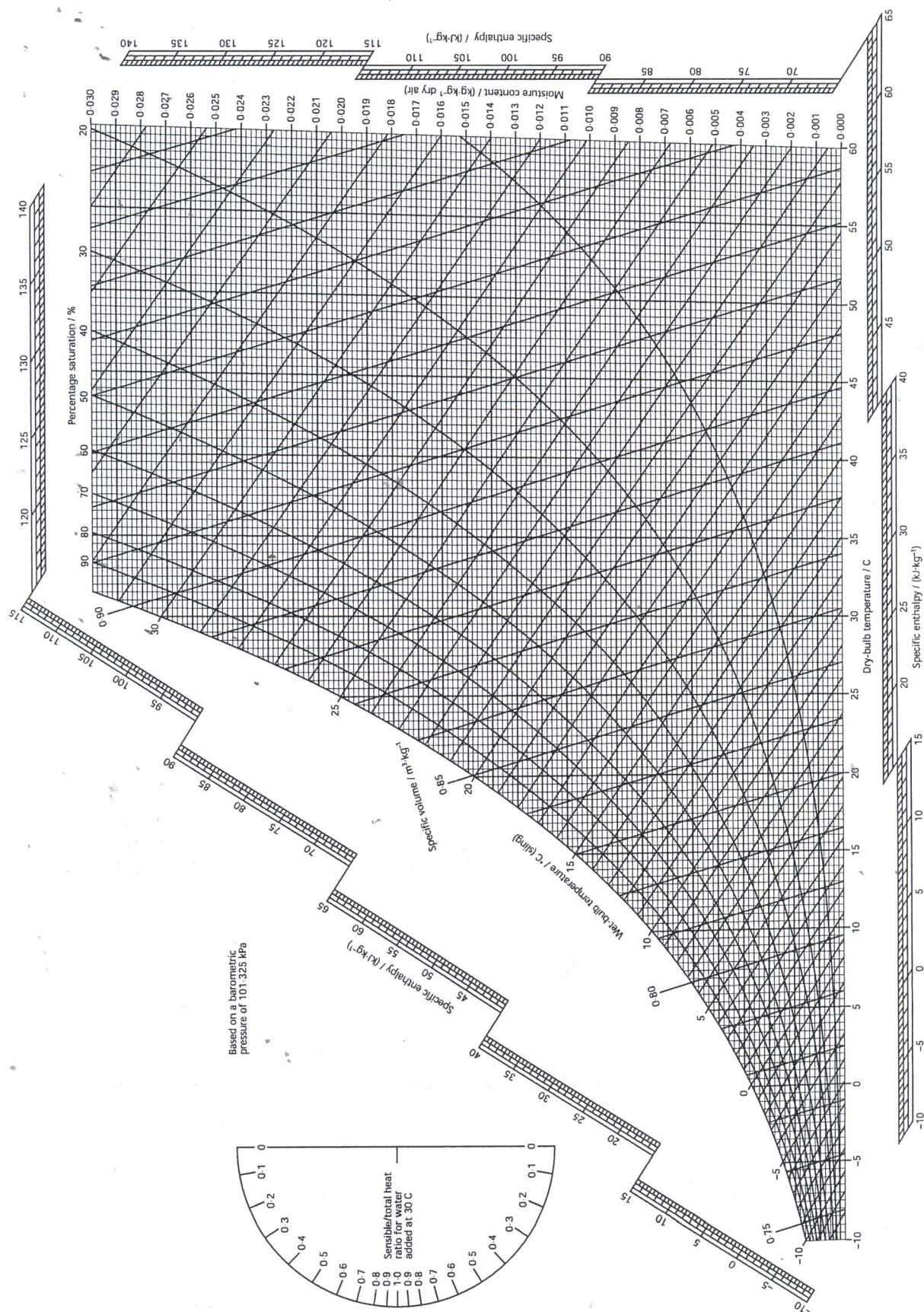


Figure C1.2 CIBSE psychrometric chart (-10 to +60 °C) (CIBSE Guide C includes charts for temperature ranges -10 to +60 °C and +10 to 110 °C)