Document No UniKL MFI_SD_AC41
Revision No 02
Effective Date 01 December 2008

CONFIDENTIAL

SET A

UNIVERSITI KUALA LUMPUR

Malaysia France Institute

FINAL EXAMINATION

JULY 2010 SESSION

SUBJECT CODE	:	FCB 20603
SUBJECT TITLE	:	HEATING & COOLING LOAD
LEVEL	:	BACHELOR
DURATION	:	9.00am – 12.00pm (3 hours)
DATE / TIME	:	20 NOVEMBER 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.
7. Formulae are appended.

THERE ARE 4 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

(25 marks)

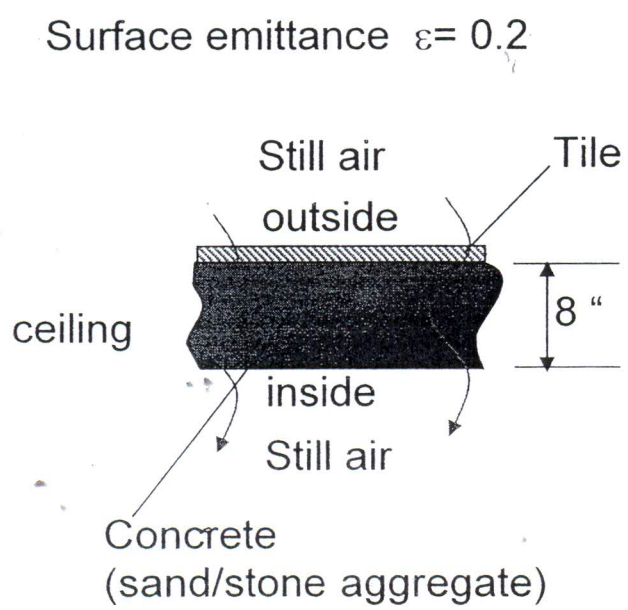

Figure 1. Floor construction

Figure 1 above shows a floor construction of a commercial building. From the data and tables given in the Appendix, find the overall heat transfer coefficient, U in Btu/ft².hr.°F.

Question 2.

Calculate the total radiation for a horizontal surface at 3:00 pm on 21 July in Bangi. Neglect reflected radiation. (Longitude (Bangi) = 101° 48' E, latitude (Bangi) =2 ° 56' N).

2.1 Solar time, t_{sol} (2 marks)

2.2 Hour angle, h (2 marks)

2.3 Solar altitude, β (2 marks)

2.4 Solar azimuth, Φ (2 marks)

2.5 Angle of incidence, θ (2 marks)

2.6 Direct normal radiation, G_{ND} (3 marks)

2.7 Direct radiation, G_D (3 marks)

2.8 Diffuse radiation, G_d (4 marks)

2.9 Total radiation, G_t (5 marks)