UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2012/2013

COURSE NAME	:	BUILDING SERVICES I
COURSE CODE	:	BFB 40603
PROGRAM	:	3 BFB
EXAMINATION DATE	:	JUNE 2013
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS IN **PART A**, AND **TWO (2)** QUESTIONS IN **PART B**. WRITE ALL ANSWERS IN THE ANSWER SCRIPT.

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Part A : Answer ALL Questions

(a) Choose the correct answers.

1. Building services in a building are intended to provide the following, except;

   (a) Healthy indoor environment
   (b) Comfortable indoor environment
   (c) Safe indoor environment
   (d) Vibrant indoor environment

2. Which of the following is not the design factor that affects energy use in buildings?

   (a) Macro and micro climate
   (b) Envelope fabric selections
   (c) Indoor environmental standards
   (d) Occupancy and management

3. Building has a huge impact on the environment by the followings except;

   (a) Energy consumption
   (b) Providing shelter
   (c) Waste production
   (d) Materials consumption

4. Green buildings are designed to;

   (a) Make efficient use of all resources and improve human life
   (b) Safe energy and minimize waste
   (c) Minimize emissions and generate savings
   (d) Maximize the productivity of humans and increase occupancy

5. An improved microclimate around a building brings the following types of benefits, except;

   (a) Longer life for building materials
   (b) Increase of rainfall in the region
   (c) Lower energy cost
   (d) Increased user satisfaction and value

6. _____ heat is the heat energy absorbed of released from a substance during change of temperature.

   (a) Latent
   (b) Solid
   (c) Sensible
   (d) Radiation

7. The transfer of heat energy through a material by the bodily movement of particles is called:

   (a) Convection
   (b) Expansion
   (c) Radiation
   (d) Conduction

8. The principle greenhouse gases as the following, except:

   (a) Methane, CH4
   (b) Carbon dioxide, CO2
   (c) Carbon Monoxide CO
   (d) Chlorofluorocarbons, CFCs

9. A thermodynamic function of a system, equivalent to the sum of the internal energy of the system plus the product of its volume, is called;

   (a) Thermal heat transfer
   (b) Specific latent heat
   (c) Substance expansion
   (d) Enthalpy

10. The main causes of condensation in buildings are as the following, except;

    (a) Temperatures
    (b) Envelope materials
    (c) Use of buildings
    (d) Ventilation

(20 Marks)

(b) Briefly define the following terms:

11. Humidity
12. Energy
13. Dew-point
14. Temperature
15. Ventilation

(10 marks)

16. Describe the electrical supply of large and tall buildings.

(10 marks)

Part B

Q1 (a) Give the definition of sustainability.

(3 marks)

(b) Differentiate between Direct Current and Alternating Current.

(4 marks)

(c) An air conditioning system has the cooling capacity of 6700 Btu/hr and EER of 12 is used for 8hr/day for 300 day/year. Determine the following items:

i. Power consumption of the air con system
ii. Energy consumed for a year

Cost incurred if the electricity tariff is RM 0.12/kWhr

(10marks)

(d) Explain functions Building Sustainability Rating Tools (BSRTs) and give 3 examples of such tools.

(8 marks)

(e) Briefly explain the impact building has on the natural environment.

(5marks)

Q2 (a) Define cooling load

(5 marks)

(b) Name five components that contribute to cooling load for a given space

(5 marks)

(c) What is Psychrometry and its relation to air-conditioning design?

(10 marks)

(d) Describe the function of Air-handling Unit (AHU) in an air-conditioning system.

(10 marks)

Q3 (a) Sketch and briefly describe **three (3)** stages of electrical supply.

(10 marks)

(b) List **five (5)** passive design factors affecting energy use in buildings.

(5 marks)

(c) Describe the term active control systems in a building and give **three (3)** examples of such systems.

(10 marks)

(d) Explain how electrical overload protection can be provided in buildings .

(5marks)

- End of Questions -