UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2010/2011

COURSE NAME	:	BUILDING SERVICES I
COURSE CODE	:	BFB4063
PROGRAMME	:	BFF
EXAMINATION DATE	:	JANUARY 2011
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS IN **PART A**, AND **TWO (2)** QUESTIONS IN **PART B**.

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

Part A : Answer ALL Questions

(a) Choose the correct answers.

(20 marks)

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 following 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 in winter
   (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

(b) Briefly define the following terms:

(10 marks)

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

(c) Fill in the blanks.

(10 marks)

(i) The physical comfort of humans greatly depends upon the following physical factors: _____ 16), _____ (17), _____ (18) and _____ (19).

(ii) _____ (20), _____ (21) and _____ (22) are factors to consider in the provision of ventilation.

(iii) Variables and specification of humidity are relative humidity, _____ (21), _____ (22) and _____ (23).

Part B

Q1 (a) Give the definition of sustainability.

(3 marks)

(b) Differentiate between Direct Current and Alternating Current.

(4 marks)

(c) Solar energy is a reliable source of energy that can reduce building's operational carbon emission. Explain issues that be seen as a challenge to its efficiency.

(10marks)

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

(8 marks)

(e) Introducing outdoor air through direct openings can enhance the indoor environmental quality (IEQ) of an air-conditioned building. List **five (5)** its disadvantages.

(5marks)

Q2 (a) Define cooling load

(5 marks)

(b) Identify major features of a bioclimatic building.

(5 marks)

(c) What are Energy Efficiency Rating (EER) and the types of air conditioning suitable for using it?

(10 marks)

(d) Describe how Variable Speed Drives (VSD) can be used to reduce energy consumption for mechanical and electrical equipments in buildings.

(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.

(5 marks)

(d) Constructing a *green building* will cost more than a conventional building. Discuss this statement.

(10 marks)