

**CONFIDENTIAL**



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2015/2016**

COURSE NAME : BUILDING SERVICES 1  
COURSE CODE : BFB 40603  
PROGRAMME CODE : BFF  
EXAMINATION DATE : JUNE / JULY 2016  
DURATION : 3 HOURS  
INSTRUCTION : ANSWER **FOUR (4)** QUESTIONS ONLY.

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

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- Q1** (a) Air Conditioning Systems can be classified in **TWO (2)** categories which are Individual Room Air Conditioning System and Central Air Conditioning System. Explain these categories based on their functions. (8 marks)
- (b) Central air conditioning plant is usually used in hotels, hospitals and large buildings that are having multiple floors with high cooling loads. Describe how the central air conditioning plant operates in these buildings. (5 marks)
- (c) There are many problems that may cause your air conditioning system to break down. One of the most common problems is inadequate maintenance. Propose **FOUR (4)** possible solutions to solve the inadequate maintenance. (12 marks)
- Q2** (a) Heat can transfer from one body to another in three modes, namely through conduction, convection and radiation. Describe how heat is transferred from human body to its surroundings based on radiation and convection modes. (8 marks)
- (b) Define the Overall Thermal Transfer Value (OTTV). (2 marks)
- (c) Calculate the OTTV of the building as shown in **Figure Q2(c)**. Assume that the four elevations of the building are identical. Determine whether this building follows the OTTV standard in Malaysia ( $45 \text{ Wm}^{-2}$ ). (15 marks)
- Q3** (a) Adequate safety in the use of electricity on site is essential and a legal obligation upon employers. Less safety practice at workplace can cause fatal electrical shocks. If you are the employer for a construction company, suggest how to prevent the electrical shock from occurring at the site. (9 marks)
- (b) 'Lockout and Tagout Procedure' is required for the safety of workers due to hazards at the workplace. Explain how to apply this procedure. (8 marks)

- (c) Calculate the currents (I) and voltage drop (V) that are flowing through  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  in the series-parallel combination circuit as shown in **Figure Q3(c)**. (8 marks)

- Q4** (a) Describe how the electricity arrives in your area (415V) from the national supply network (400kV). (6 marks)
- (b) Explain briefly the relationship between 'fuses' and 'circuit breaker'. (4 marks)
- (c) An occupant has died because of electrical shock after he touched a device when a lightning strike directly to the building. Propose solutions that can avoid the incident from happening in the building. (15 marks)

- Q5** (a) Give **THREE (3)** examples of building transportations and differentiate the movement between each of the transport systems. (6 marks)
- (b) Sketch a basic lift system and explain **FIVE (5)** functions of the components. (10 marks)
- (c) Explain the different features and functions between hydraulic lift and electric lift. (9 marks)

**-END OF QUESTIONS-**

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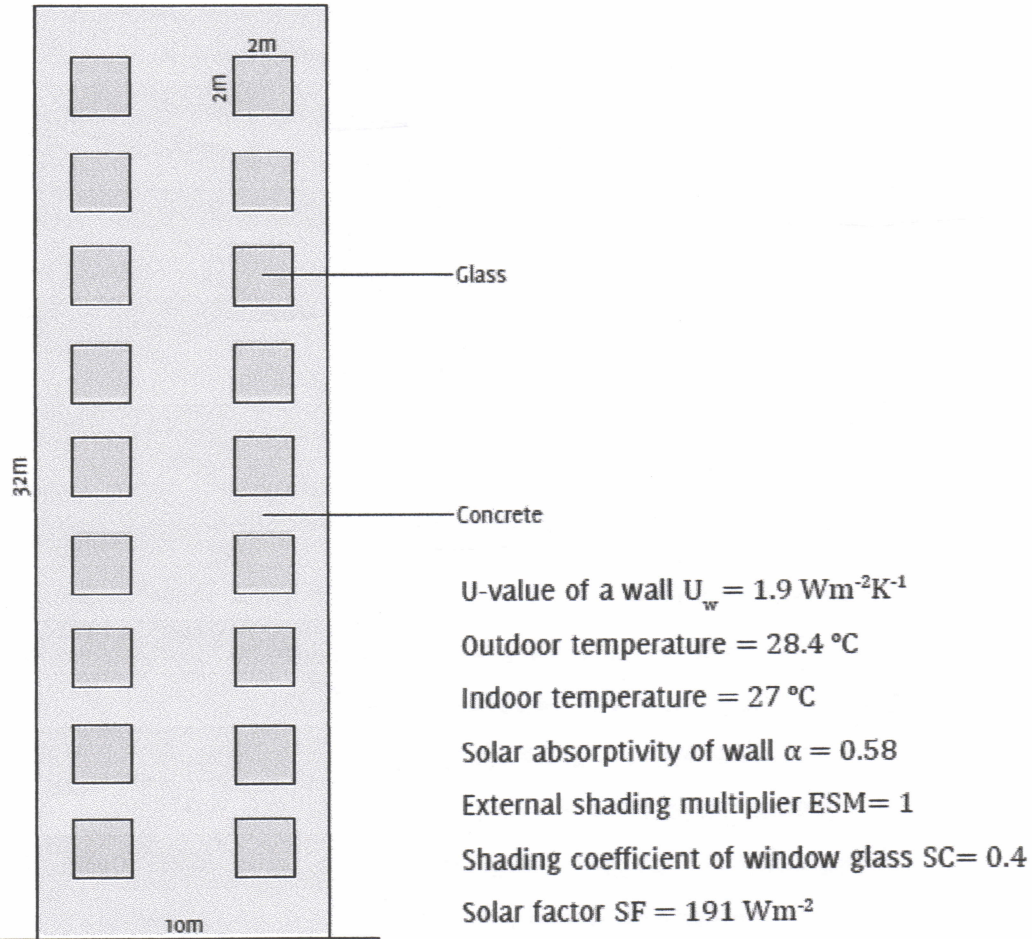


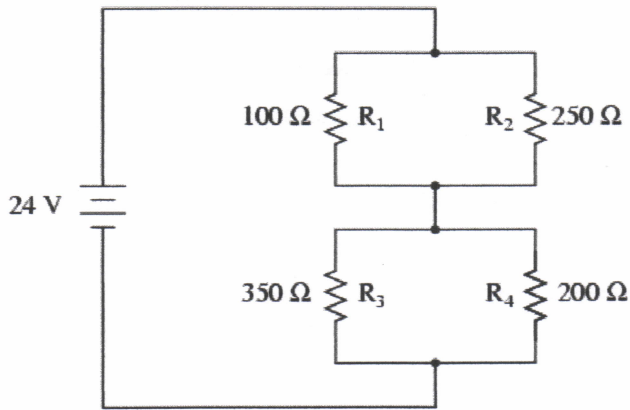
Figure Q2(c): Building in Malaysia

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*A series-parallel combination circuit*



**Figure Q3(c): A series-parallel combination circuit**