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**UTHM**

Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESI 2021/2022**

COURSE NAME : BUILDING SERVICES TECHNOLOGY  
COURSE CODE : BFR 32103  
PROGRAMME CODE : BFR  
EXAMINATION DATE : JULY 2022  
DURATION : 3 HOURS  
INSTRUCTION

1. ANSWER ALL QUESTIONS
2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK**.
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

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**TERBUKA**

- Q1** The comfort of the people in a building is depending on building services. Therefore, the building may not function effectively if building services are not provided.
- (a) Define building services in architectural context. (2 marks)
  - (b) List building services systems that usually involve in designing a building. (6 marks)
  - (c) Evaluate the effects of inexistence of building services in 5 storey office building. (5 marks)
  - (d) There is a 20 storey building that you need to design in Johor Bahru. Using a diagram, explain the cold water plumbing system that you proposed for the building. (12 marks)
- Q2** In our daily lives, we use electricity in a variety of ways. It is used to power fans, light up rooms, and run home appliances like electric stoves and air conditioners.
- (a) Identify the type of electrical supply system that is suitable for a house. (2 marks)
  - (b) Explain your understanding about electrical substation. (3 marks)
  - (c) With aid of illustration, describe the distribution of electrical supply from power plant to residential areas. (10 marks)
  - (d) As Assistant Architect, your client seeks for your advice on electrical appliances and layout for his house. Based on **FIGURE Q2**, illustrate the electrical appliances and wiring layout on the plan given. (10 marks)

- Q3** Fire safety is one of the most important aspects of building service to ensure the safety of users and the protection of the building. Based on fire safety requirements, both active and passive fire protection systems must be strategically located in buildings to ensure that they serve their function in the case of a fire.
- (a) Based on your understanding, compare active and passive fire protection. (8 marks)
- (b) List **FOUR (4)** types of fire extinguisher that are used for safety and fire prevention system. (4 marks)
- (c) In order to protect the life and property of the occupants, an active fire protection system should be installed in a building. With the aid of sketches, explain the fire protection system below in compliance with Uniform Building By-Laws 1984:
- i. Dry riser
  - ii. Wet riser
- (13 marks)
- Q4** (a) A staircase is a type of vertical transportation that has been used in buildings for centuries. Nowadays, mechanical conveyors such as elevators, travellers, and escalators are utilised to carry people and equipment between floors.
- (a) Define elevator, escalator and traveller. (6 marks)
- (b) List **SIX (6)** types of elevator. (6 marks)
- (c) Compare the differences between traction elevator and hydraulic elevator. (6 marks)
- (d) Decide the best solution for a vertical transportation system for a handicapped occupant. Justify your answer. (7 marks)

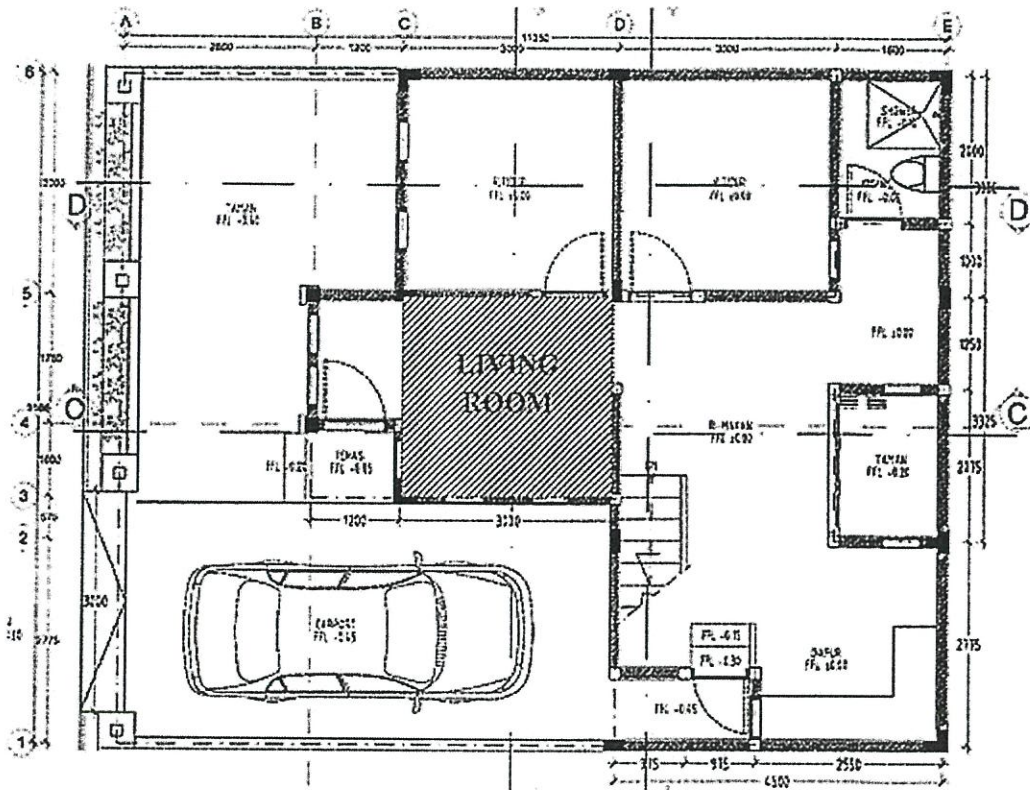
**-END OF QUESTIONS-**



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FIGURE Q2



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