



**UTHM**  
Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2023/2024**

- COURSE NAME : BUILDING SERVICES I / BUILDING SERVICES TECHNOLOGY
- COURSE CODE : BFR 23303 / BFR 32103
- PROGRAMME CODE : BFR
- EXAMINATION DATE : JULY 2024
- DURATION : 3 HOURS
- INSTRUCTIONS :
1. ANSWER ALL QUESTIONS
  2. THIS FINAL EXAMINATION IS CONDUCTED VIA
    - Open book
    - 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

**Q1** Building services play a crucial role in sustaining the overall building and it should be integrated from a very early stage in the design process despite the complexity of the building project.

- (a) Define building services.  
(3 marks)
- (b) List **THREE (3)** types of building services and explain the purpose of each type.  
(6 marks)
- (c) Explain **THREE (3)** importances of building services.  
(6 marks)
- (d) Poor building services system installation will lead to bad consequences. Discuss **FIVE (5)** consequences in the aspect of building efficiency, functionality, and safety.  
(10 marks)

**Q2** Water supply system is an important infrastructure to the urban planning residential and built environment in Malaysia. The primary function of water supply system is to distribute water to all consumers. The water supply must be distributed in an optimum quantity and pressure in ensuring sufficient water supply.

- (a) List **THREE (3)** categories of water usage.  
(3 marks)
- (b) Explain **THREE (3)** categories of water supply.  
(6 marks)
- (c) Define water treatment process with the aid of diagram.  
(7 marks)
- (d) With the aid of diagram, illustrate and explain **THREE (3)** types of water distribution network.  
(9 marks)

**Q3** A well-maintained sewerage system plays a crucial role in public health and environmental protection by effectively collecting, treating, and disposing the wastewater, preventing contamination of water sources, and ensuring a cleaner living environment for communities.

- (a) List and explain **TWO (2)** types of sewerage system and their function to the building premise.  
(4 marks)

- (b) Explain the types of wastewater sewers widely used find in Malaysia.  
(4 marks)
- (c) There are various types of sanitary piping systems. In your opinion, propose and illustrate the most economical sanitary pipe system for a double storey house.  
(5 marks)
- (d) Based on **FIGURE Q3.1** in **Appendix A**, provide the following:
- (i) Illustrate sanitary flow system diagram from sanitary fittings to septic tank by using appropriate diagram. (Use the floor plan provided in Appendix A and attach it in your answer script)  
(6 marks)
- (ii) With appropriate sketches, illustrate diagrammatic sanitary layout.  
(6 marks)
- Q4** The purpose of electrical installation is to supply and distribute electric power according to the requirements of the building design.
- (a) List **FOUR (4)** types of electrical wiring system in Malaysia.  
(4 marks)
- (b) Based on the statement above:
- (i) Define electrical substation.  
(2 marks)
- (ii) list **TWO (2)** types of electrical substations in Malaysia.  
(4 marks)
- (c) Differentiate Single Phase and Three Phase electrical power supply in Malaysia.  
(8 marks)
- (d) Illustrate the flow of electrical supply distribution from power generation plant to residential areas.  
(7 marks)

- END OF QUESTIONS -

APPENDIX A

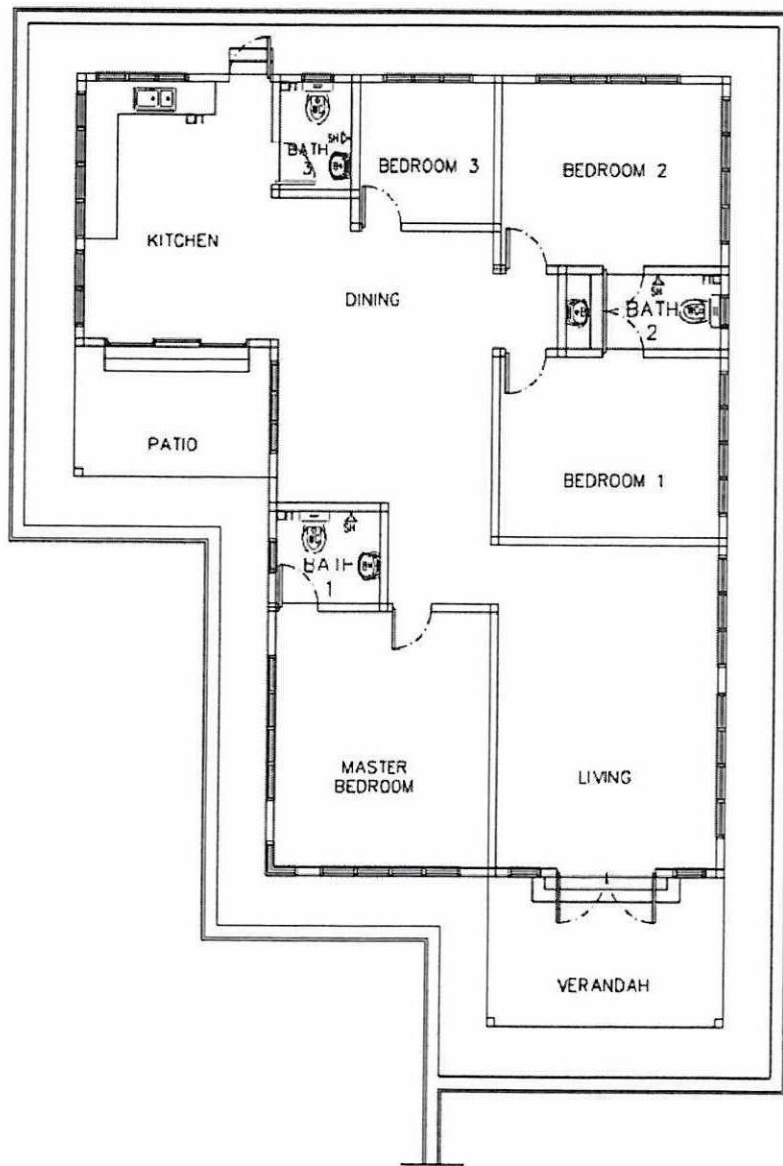


Figure Q3.1 Ground floor plan of a single storey house. Refer Q3(d)(i).

TERBUKA