



UTHM

Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION SEMESTER II SESSION 2022/2023

COURSE NAME : BUILDING SERVICES TECHNOLOGY

COURSE CODE : BFR 32103

PROGRAMME CODE : BFF

EXAMINATION DATE : JULY/ AUGUST 2023

DURATION : 3 HOURS

- INSTRUCTIONS
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 **FIVE** PAGES

- Q1** Building services should be integrated into the overall building design from a very early stage in the design process, particularly on complex building projects such as hospitals and institution.
- (a) Define building services. (3 marks)
- (b) List **SIX (6)** types of building services. (6 marks)
- (c) Explain the purpose of the following system: (6 marks)
- i. Plumbing System
 - ii. Sanitary System
 - iii. Electrical System
- (d) Discuss the consequences of improper installation for building services in the aspects of building efficiency, functionality and safety. (10 marks)
- Q2** Water supply system is an important infrastructure in Malaysia. The primary function of water supply systems is to distribute water to all consumers. The water supply must be given in sufficient quantity and at an adequate pressure to make sure the water flows smoothly.
- (a) List **THREE (3)** categories of water damage. (3 marks)
- (b) Define greywater. (3 marks)
- (c) Explain **THREE (3)** differences between direct water supply system and indirect water supply system. (6 marks)
- (d) Illustrate diagram direct water supply system and indirect water supply system in a 2-storey building. (13 marks)

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Q3 The purpose of electrical installation is to supply and distribute electric power according to the requirements of the building.

(a) Differentiate Single Phase and Three Phase electrical power supply. (6 marks)

(b) Illustrate the diagram of electrical supply distribution from power plant to residential areas. (7 marks)

(c) Propose the electrical layout plan with symbols based on **Figure Q3(c)**. (14 marks)

Q4 In order to improve public health, the Malaysian government has implemented sewerage systems such as individual/communal septic tanks, Oxidation Ponds, and Mechanically Connected Systems. These sewerage systems are constructed underground and lead the wastewater to sewage treatment plants.

(a) Define wastewater, sewerage system and sewer. (3 marks)

(b) Explain the types of wastewater sewers utilised in Malaysia. (4 marks)

(c) There are various types of sanitary piping systems. In your opinion, propose the most economical sanitary pipe system. (6 marks)

(d) Based on **Figure Q4(d)**, provide the following:

i. Illustrate sanitary flow diagram from sanitary fittings to septic tank.

ii. Sketch diagrammatic sanitary layout based on your answer in Q4 (d) i.

(12 marks)

-END OF QUESTIONS –

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FINAL EXAMINATION

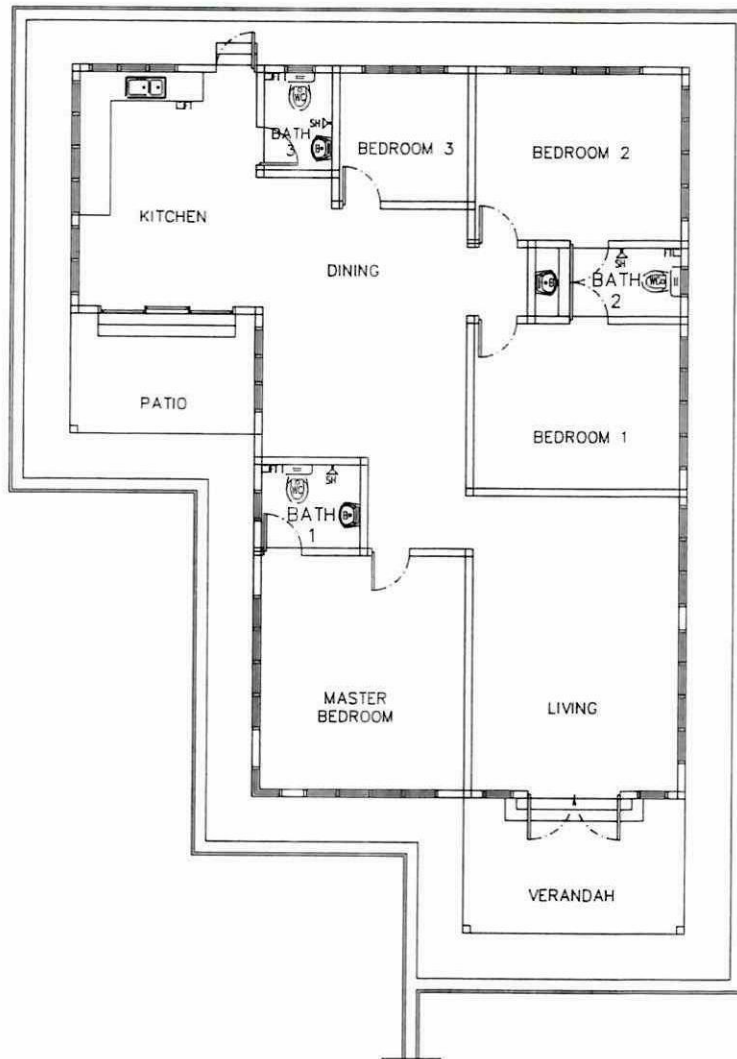
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FigureQ3(c)



FLOOR PLAN
Not To Scale

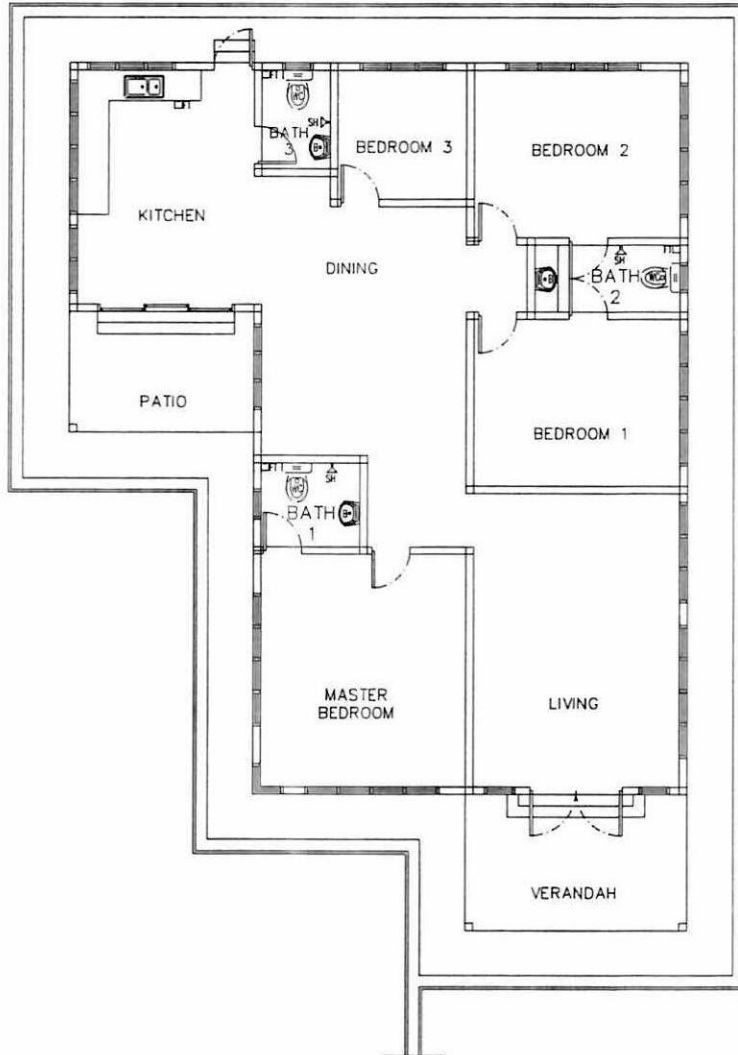
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FigureQ4(d)



FLOOR PLAN
Not To Scale

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