



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2023/2024

- COURSE NAME : BUILDING INFRASTRUCTURE
- COURSE CODE : BFR 31903
- 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** Ventilation system is important in a building design. Good ventilation is a condition where air circulation could be flown smoothly in a building.
- (a) Explain **TWO (2)** the purposes of ventilation in a building.
(4 marks)
- (b) Traditional Malay House is a good design example of natural ventilation system. Illustrate the ventilation system of the house.
(9 marks)
- (c) Differentiate **THREE (3)** aspects between central unit and split unit.
(12 marks)
- Q2** Vertical transportation is an important system, especially in a medium and high-rise building. Nowadays, mechanical conveyors such as elevators, travellers, and escalators are utilised to carry people and equipment between floors.
- (a) List **SEVEN (7)** types of elevators.
(7 marks)
- (b) Explain elevator, escalator, and traveller.
(6 marks)
- (c) With the aid of illustration, differentiate between traction lift and hydraulic lift.
(12 marks)
- Q3** Under firefighting system in a building, design solution should address the effect of fire, smoke, and toxic fumes in totality.
- (a) Explain **FIVE (5)** good building design with consideration on fire safety measures.
(10 marks)
- (b) There are four concepts of fire safety that need to be understood which are compartmentation, evacuation, active intervention, and access for firefighting and rescue.
- (i) From your understanding, explain the importance of compartmentation in passive fire fighting strategy.
(3 marks)

- (ii) Under passive containment, there are four (4) specific features required for staircase and lobby enclosure. With the aid of illustration, explain all these features.

(12 marks)

Q4 Active intervention in firefighting system encompasses external and inside of the premise.

- (a) Some of the building require an active fire prevention and control system. Identify **FIVE (5)** active measures for the system.

(5 marks)

- (b) Differentiate between wet-riser and dry-riser systems in a building.

(8 marks)

- (c) As an architect from XYZ Architect, you were appointed by a client to design a big office building on a piece of land, located at the junction of the main road. **Figure Q4.1** below illustrates the site. The site is on Lot 4308.

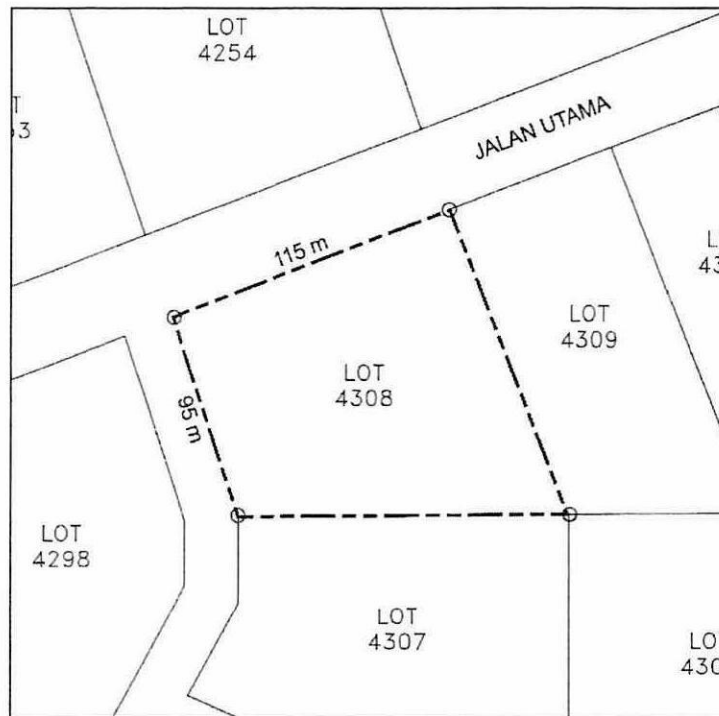


Figure Q4.1 The site.

From the brief, you have come up with a design where the dimension of the building are 73 m (length), 62 m (width), and 15 m (height). Illustrate the layout of the building and minimum requirement for the fire appliance access way. Include dimensions in the drawing.

Table Q4.1 below shows the scale of Bomba fire appliance access way as mentioned in by-law 140 in the UBBL 1984:

Table Q4.1 Bomba fire appliance access way

Building volume in m ³	Minimum building perimeter rate
7,000 to 28,000	1/6
28,000 to 56,000	1/4
56,000 to 84,000	1/2
84,000 to 112,000	3/4
112,000 and above	Island

(12 marks)

- END OF QUESTIONS -