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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2021/2022**

COURSE NAME : CONSTRUCTION PLANT
MANAGEMENT

COURSE CODE : BFP 40203

PROGRAMME CODE : BFF

EXAMINATION DATE : JANUARY / FEBRUARY 2022

DURATION : 3 HOURS

INSTRUCTION : 1. ANSWER **ALL** QUESTIONS.
2. THIS FINAL EXAMINATION IS
AN **ONLINE** ASSESSMENT AND
CONDUCTED VIA **CLOSE BOOK**.

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

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- Q1** (a) Describe briefly the trafficability and loadability in earthmoving process. Suggest the improvement measures if poor trafficability and loadability detected during earthwork activities. (6 marks)
- (b) (i) Estimate the base width and height of a triangular spoil bank that is created when excavating for the construction of a raft foundation for the terrace house measuring 850 mm deep and 8.5 m wide. The soil is wet clay having a swell of 17% and an angle of repose of 38°. (8 marks)
- (ii) Estimate the size of spoil pile if total length of triangular spoil bank in **b(i)** of 15.79 m need to be changed into 3 numbers of spoil pile. Assume the angle of repose similar to **b(i)**. (7 marks)
- (c) Explain **TWO (2)** principles force that applicable to produce deep compaction of soil. (4 marks)
- Q2** (a) There are a few important factors involved to achieve an optimum excavator and haul unit combination. Illustrate **TWO (2)** of the important factors involved to achieve an optimum excavator and haul unit combination (4 marks)
- (b) **Table Q2** show the relevant information for earthwork cost and production
- (i) Calculate the dipper capacity if the number of unit required for truck size 8.79 BCM and 12.6 BCM are 12.32 and 10.37 respectively. (10 marks)
- (ii) Develop the cost comparison table to obtain the numbers of trucks should be used to provide the lowest loading and hauling cost if the numbers of truck used for 8.79 BCM and 12.6 BCM are 14 and 13 respectively. (11 marks)
- Q3** **Figure Q3** shows the cross section for a new high rise building project. The building will be built on the excavated platform level as shown in the figure and located 5 meters away from retaining wall. Based on the statement and all the information given in the figure, answer the following questions.
- (a) As a project engineer appointed to manage the project, you are required to propose **FIVE (5)** important elements need to be considered in your planning before execution of earthwork. (10 marks)

- (b) Suggest **FIVE (5)** types of machinery that can be used effectively based on site condition and justify the efficient operation of those machines to complete the task. (10 marks)
- (c) Analyse **FIVE (5)** safety procedure need to be emphasized along the earthwork activities. (5 marks)

Q4 Vertical transport system in construction can be defined as the process of movement materials vertically either using hoist, mobile cranes or tower cranes. Therefore, the selection of vertical transportation machinery must be properly done to avoid the occurrence of failure during operation. Based on the statement, answer the following questions.

- (a) Describe the different between materials hoist and passenger hoist. (4 marks)
- (b) Suggest **FOUR (4)** safety checklists must be done before material or passenger hoists can be used for high rise building project to avoid the occurrence of failure. (8 marks)
- (c) Propose **THREE (3)** types of cranes that can be used to mobilize the construction materials with an average of weight about 5 to 10 tonnes for 20 storey of building and within the congested and confine area. (9 marks)
- (d) Briefly, explain **TWO (2)** significant consideration need to be done before erection of tower cranes for high rise building and poor soil trafficability. (4 marks)

-END OF QUESTIONS-



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TABLE Q2

Item		
Bucket fill factor: 0.85		
Load Factor: 0.89		
Job efficiency: 0.85		
Dipper cycle time: 25 sec		
Rate: RM86.00/hour		
Trucks:		
Size Truck (BCM)	Cost (RM/h)	Transit Time(h)
8.79	59.00	0.55
12.6	78.00	0.65

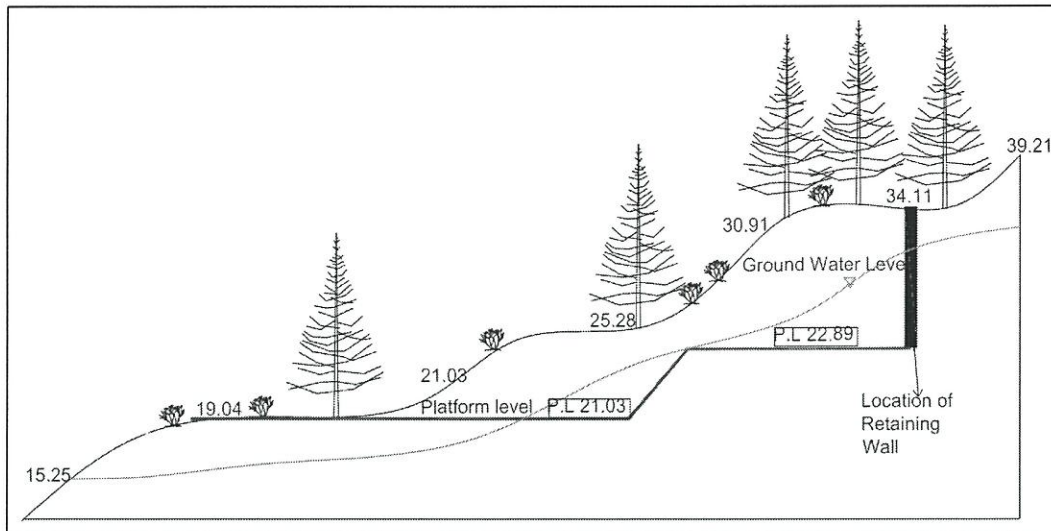


FIGURE Q3

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