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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : SUSTAINABLE CONSTRUCTION
MANAGEMENT

COURSE CODE : BFC 32703

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 You have been appointed as a project manager of a sustainable education hub project consisting of 12 blocks of 14 story faculty buildings, 10 units of four-story offices and 20 blocks of eight-story hostel buildings in a 350 acres size of land near Pagoh, Johor.

(a) Explain the appropriate approaches to incorporate elements of sustainable building design and construction in the project.

(12 marks)

(b) Justify strategies to manage between time, cost, quality and sustainable performance criteria in the project in **Q1(a)**.

(5 marks)

(c) The clients are interested in lean construction and considering to integrate lean construction as sustainable approach in the project. Illustrate a diagram and prepare a brief explanation to convince the clients why they need to adopt lean construction in the project?

(8 marks)

Q2 (a) Covid-19 pandemic has badly impacted construction industry. With appropriate examples, discuss how ICT can be utilised in order to minimise the delay of construction project during the Covid-19 pandemic.

(8 marks)

(b) If a construction project required to be completed early, propose project delivery methods available for clients to opt for. Justify your proposal.

(5 marks)

(c) Below are three statements that are often used to describe the environment of a matrix organisation (matrix):

(i) Project management in a matrix allows for fuller utilization of personnel.

(ii) The project manager and functional manager must agree on priorities.

(iii) Decision-making in a matrix requires continual trade-offs on time, cost, technical risk, and uncertainty.

Do you agree or disagree? Justify your answer.

(12 marks)

Q3 You are an engineer at Majufocus Construction, Batu Pahat, the director assigned you to prepare a schedule for construction of activity hall. Based on the information given in **Table Q3** perform the following:

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- (a) Determine a network diagram using a Precedence Diagramming Method (PDM) for the project by calculating the early start (ES), early finish (EF), late start (LS) and late finish (LF) for each activity and the total project duration. Mark the critical activities in your network. C5
(10 marks)
- (b) Provide Gantt chart of the project based on the data obtained in Q3 (a).
(10 marks)
- (c) Justify how the Gantt Chart could assist the execution and the completion of construction project activities.
(5 marks)
- Q4** Manpower or labour resource management is important aspects that require serious consideration during project development. It is made up between 20-30% of total construction cost. Managing labour involved planning, organizing, monitoring and control.
- (a) Answer the following questions based on **Table Q4**.
- (i) Construct a network diagram using Arrow Diagram Method (ADM) to determine the constructions activities total duration.
(4.5 marks)
- (ii) Summarize all the ES, LS, EF, LF and TF in a table. Show the critical activities in the construction activities network.
(4.5 marks)
- (iii) Based on the self-developed ADM network diagram, construct a resource histogram to determine the resource distribution. Perform a resource levelling if the maximum number of labour is limited to 11 person only.
(8 marks)
- (b) A risk management plan is a document that a project manager prepares to foresee risks, estimate impacts, and define responses to risks. Based on the definition, describe steps of risk management process and explain each step.
(8 marks)

– END OF QUESTIONS –



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Table Q 3

Activity	Duration (days)	Predecessor
A	1	-
B	5	A
C	6	A
E	4	C
F	7	C
G	4	B
H	4	E
I	4	G
J	6	G
K	3	H,F
S	7	F
L	3	I
M	7	J
N	2	K,S
O	3	L,M
P	4	N,O

Table Q4

Activity	Duration	Labour
1-2	5	3
2-3	6	4
2-4	5	4
2-5	8	3
3-7	2	5
3-4	Dummy	-
4-7	3	4
5-6	3	4
6-7	1	6
7-8	3	3

