Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2016/2017

COURSE NAME	:	SUSTAINABLE CONSTRUCTION MANAGEMENT
COURSE CODE	:	BFC32703
PROGRAMME CODE	:	BFF
EXAMINATION DATE	:	JUNE 2017
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

Q1 (a) Sustainable construction takes the concepts from sustainability and synthesizes them with the concepts of construction management. Therefore, many strategies for sustainable construction management can be implemented throughout the construction project life cycle. Explain **NINE (9)** possible strategies which can be implemented in construction project life cycle.

(9 marks)

(b) The Green Building Index (GBI) is Malaysia's industry green rating tool recognize buildings that promote sustainability in the built environment and raise awareness among Developers, Architects, Engineers, Planners, Designers, Contractors and the Public about environmental issues and our responsibility for the future. Buildings will be awarded the GBI rating based on **SIX (6)** key criteria. State the criteria and justify in details the criteria to award a building for Platinum GBI rating.

(12 marks)

(c) There are many types of techniques available to achieve sustainable construction. Differentiate between *lean construction* and *value management* techniques.

(4 marks)

Q2 (a) Coordinating is one of the management functions in organizational approach. It can be defined as the synchronization and integration of activities, responsibilities and command and control structures to ensure that the resources of organization are used most efficiently in pursuit of the specific objectives. Based on the definition given, illustrate **TWO (2)** possible coordination activities that may take place in a construction project.

(6 marks)

(b) Differentiate matrix organisation from pure project organization in terms of characteristics, advantages and disadvantages. Provide **TWO (2)** points for each of the comparison items.

(12 marks)

(c) Discuss **TWO (2)** disadvantages of Design-Bid-Build Method (Traditional Method) that cause client to opt for other procurement methods such as Design-Build (DB) and Construction Management (CM).

(7 marks)

Q3 Based on the **Table 1:**

(a) Construct a network diagram using Precedence Diagram Method (PDM) for the project and calculate the Early Start (ES), Early Finish (EF), Late Start (LS), and Late Finish (LF) for each activity.

(10 marks)

(b) Determine the critical path for the network.

(2 marks)

(c) Construct a Gantt chart of the project based on the data obtained (used ES and EF time)

(10 mark)

(d) Construct a financial S-Curve (actual percentage completion to date) for the project based on the data obtained from Q3(c).

(3 marks)

Q4 (a) Due to the flood in Kelantan, there is a need to reconstruct a housing area in order to provide immediate shelters for victims. You are assigned as the project manager by your organization to manage the construction of a victim's house. Refer to activities in **Table 2**.

(i) Analyze each activity in **Table 2** by determining the total float and provide a list of critical activities in the project.

(4 marks)

(ii) Construct a resource histogram to determine the resources distribution.

(6 marks)

(iii) Due to budget constraint, the maximum number of volunteers in your project is 5 workers. Produce a resource levelling by ensuring the maximum number of workers is not exceeding 5 workers.

(3 marks)

(b) Explain the following Total Quality Management (TQM) supporting elements:

(i) Reward and recognition

(3 marks)

(ii) Measurement

(3 marks)

(c) Explain how the followings are important in controlling project cost:

(i) Effective time management

(3 marks)

(ii) Project change control

(3 marks)

– END OF QUESTIONS –

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TABLE 1

Activity	Activity Description	Duration (Weeks)	Predecessors	Cost (RM)	Actual Percentage Completion To Date
A	Setting Out	1	-	2000	100%
B	Earthworks	1	A	3000	100%
C	Piling Works	2	B	6000	80%
D	Work Below Lowest Floor Finish	4	C	8000	60%
E	Frame	4	D	10000	40%
F	Upper Floor	4	E	8000	30%
G	External Wall	4	D	4000	10%
H	Internal Wall	4	D	4000	10%
I	Staircase	2	D	5000	20%
J	Doors and Windows	2	G,H,I	4000	5%
K	Finishes	3	DF,J	6000	0%
L	Roof	2	F	4000	0%
M	M&E Installations	4	L	6000	0%
N	Infrastructure Works	4	K	8000	0%
O	Authorities Inspection	1	M,N	2000	0%
P	Handover	1	O	1000	0%

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TABLE 2

Activity	Duration (Days)	Predecessor	Labour / day (Workers)	ES	EF	LS	LF
A	1	-	1	0	1	0	1
B	3	A	2	1	4	1	4
C	~~6~~ 12	A	4	1	3	16	18
D	4	B	2	4	8	14	18
E	2	B (FS+3)	1	7	9	7	9
F	3	E	1	9	12	9	12
G	1	F	1	12	13	17	18
H	6	F (FS-2)	2	10	16	10	16
I	2	H	1	16	18	16	18