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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2018/2019**

COURSE NAME : SUSTAINABLE CONSTRUCTION
MANAGEMENT

COURSE CODE : BFC32703

PROGRAMME CODE : BFF

EXAMINATION DATE : DECEMBER 2018 / JANUARY 2019

DURATION : 3 HOURS

INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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Q1 Project management is vital in ensuring the successful of construction projects. Project manager need to work with project team to plan the best strategies in completing a project.

(a) Explain the functions of project management in construction according to your understanding.

(6 marks)

(b) Explain the differences between ‘project management’ and ‘site management’ according to your understanding.

(4 marks)

(c) Discuss **THREE (3)** challenges as a project manager in pursuing for sustainable objectives in the construction industry.

(6 marks)

(d) Discuss the basic management activities in completing a construction project.

(i) Planning

(ii) Implementation

(iii) Controlling

(9 marks)

Q2 The world is facing a number of environmental, economic, and social challenges. In construction industry, project managers are integrating sustainability principles in improving the deliverables by adopting appropriate strategies such as using renewable materials, minimizing construction waste and pursuing for green buildings.

(a) Illustrate and explain on how the “iron triangle” or “the traditional project management objectives” can be shifted to sustainable approach.

(10 marks)

(b) Explain the strategies that can be implemented to improve sustainability in a construction project for each component stated below:

(i) Procurement

(ii) Technology

(iii) Construction waste

(iv) Materials

(v) Labours

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(10 marks)

(c) Describe in detail **TWO (2)** benefits of sustainable approach in construction industry.

(5 marks)

Q3 (a) Define the following terms:

(i) Lean construction (1 mark)

(ii) Performance bond (1 mark)

(iii) Value Engineering (1 mark)

(b) You are appointed as a construction manager to manage a construction of school building in Kuala Pilah, Negeri Sembilan. In order to reduce manpower due to budget constraint, the maximum allowable number of workers in your project is 5 persons.

(i) Explain the procedures that need to be taken in order to execute resource levelling. (4 marks)

(ii) Construct a bar chart for an Arrow Diagram Method (ADM) provided in **Figure Q3**. Show a Total Float (TF) for each of the activities clearly in the bar chart. (5 marks)

(iii) Produce a table with calculation to determine Total Float (TF) for each activity in **Figure Q3**. The table should consist Early Start (ES), Early Finish (EF), Late Start (LS), Late Finish (LF). (2 marks)

(iv) According to **Table Q3**, construct a resource histogram to determine the resources distribution (before resource levelling) (3 marks)

(v) Based on resource histogram constructed in **Q3(b)(iv)**, construct a resource histogram to determine the resources distribution (after resource levelling) (3 marks)

(vi) Produce a resource levelling with the maximum number of workers is 5. (5 marks)

DR. HENDRIK BILAL
Lecturer
Department of Building and Construction
Faculty of Civil and Environmental Engineering
Universiti Tunku Abdul Razak
Jalan Raja Musa Yusoff, Kuala Pilah, Negeri Sembilan



- Q4** You are appointed as a planner to construct a bungalow house in Yong Peng, Johor. The list of activities involved is shown in **Table Q4**. Based on that table,
- (a) Construct a precedence network diagram and compute the Early Start (ES), Early Finish (EF), Late Start (LS), Late Finish (LF), the link for 'lag or lead' and Total Float (TF) for each activity.

(12 marks)
 - (b) State the critical path (s) of the network diagram.

(1 mark)
 - (c) Referring to the developed PDM in **Q4(a)**, draw a bar chart of the project according to Early Start (ES) and show Total Float (TF). Assume the construction works operate for 7 days from 8.00 am to 5.00 pm.

(6 marks)
 - (d) Construct a physical S-curve for the developed bar chart in **Q4(c)**. Change the 'cumulative duration' to 'progress percentage' before you plot the S-curve.

(6 marks)

– END OF QUESTIONS –

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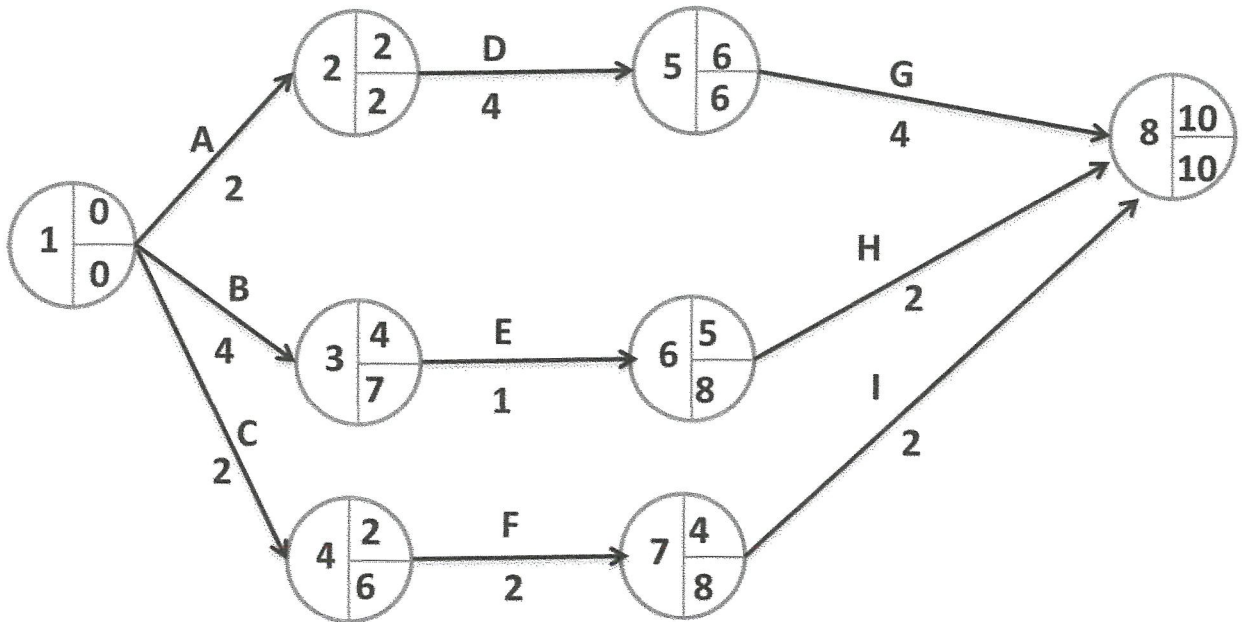


FIGURE Q3

TABLE Q3

Activity	Duration (days)	Workers/day
A	2	2
B	4	2
C	2	2
D	4	2
E	1	1
F	2	1
G	4	2
H	2	2
I	2	2

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TABLE Q4

Activity ID	Duration (days)	Predecessor (s) & Link Type	Lead/ Lag time
A	2	-	-
B	2	-	-
C	3	A (FS), B (FS)	-
D	4	B (FS)	Lag 2 day
E	4	D (SS)	Lead 2 days
F	2	C (FS)	-
G	3	E (FS), F (FS)	-
H	3	E (SS)	Lag 4 days
I	2	G (FS)	-
J	2	H (FS), I (FS)	-
K	2	J (FS)	-

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