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**UTHM**

Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

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

COURSE NAME : CONSTRUCTION PLANNING AND SCHEDULING

COURSE CODE : BFP40103

PROGRAMME CODE : BFF

EXAMINATION DATE : DECEMBER 2018 / JANUARY 2019

DURATION : 3 HOURS

INSTRUCTION : ANSWER ALL QUESTIONS AND ATTACH THE QUESTION PAPER IN THE ANSWER BOOKLET.

**TERBUKA**

THIS QUESTION PAPER CONSISTS OF NINE (9) PAGES

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**Q1** Complete the crossword in **FIGURE Q1** by filling in a word that fits each clue given.

Down:

1. \_\_\_\_\_ time is the shortest possible time activities could possibly be completed.
2. One of the principles in planning and scheduling is to build a \_\_\_\_\_ into the plan.
3. One of the characteristics of Work Breakdown Structure (WBS) is to develop a meaningful unit of work where specific responsibilities and authority can be assigned to a responsible individual.
6. The first element in Construction Project Management (CPM).

Across:

4. Gantt Chart shows the \_\_\_\_\_ activities with its duration.
5. One of the critical components in Construction Project Management (CPM).
7. A type of Work Breakdown Structure (WBS) which used project desired outcome.
8. A unique characteristic of a construction project in applying Linear Scheduling Method.
9. The amount of time a task has been delayed from its original baseline schedule.
10. The amount of time that activity in a project network can be delayed without causing a delay to subsequent activity or project completion date.

(5 marks)

**Q2** (a) Generally, the different type of procurement methods will affect the boundary of work for the contractor. Elaborate on the responsibilities of the contractor in planning and scheduling for different types of procurement method namely the Traditional Method, and Design and Build.

(6 marks)

(b) Time management is important in construction project management. One of the techniques in time management is fast-tracking. Discuss your understanding of the fast-tracking concept in construction and detail-up the consideration for fast-tracking.

(4 marks)



**Q3** A contractor is required to complete a project containing activities as shown in **FIGURE Q3**. Since the contractor enables to allocate a maximum of eight (8) labours per day for this project, improve the daily resources manually (start low, increase the resources gradually until it reaches the peaks, somewhere in the middle of project duration, and gradually decrease towards the end). Satisfy the preceding activity to comply with the maximum number of resources provided by the contractor.

(12 marks)

**Q4** Activities involve for the construction project are given in **TABLE Q4(a)**. This project starts on 5<sup>th</sup> January 2019. Based on the information given in **FIGURE Q4** and **TABLE Q4(b)**, answer the followings;

(a) Calculate the Early Start (ES), Early Finish (EF), Late Start (LS), and Late Finish (LF) for the construction using arrow diagram method.

(7 marks)

(b) Develop the Financial S-Curve for Planned and Actual.

(5 marks)

(c) Evaluate the status of the project with regards to the schedule and cost on the 23<sup>rd</sup> January 2019.

(5 marks)

(d) Determine the percentage (percent complete) work complete based on **Q4(c)**.

(2 marks)

(e) Estimate the cost at completion of the project.

(2 marks)

(f) Propose your suggestions for project improvement in current progress based on your answer in **Q4(c)**, **Q4(d)**, and **Q4(e)**.

(4 marks)

**Q5** Activities and durations listed in **TABLE Q5** show the time-cost information for a kitchen renovation project. Develop a crashing program for the project and evaluate their effects to the total project cost. Indirect (overhead) cost is RM 120 per day.

(13 marks)

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**Q6** Construct a schedule for a 5-kilometre road-resurfacing project using Linear Scheduling Method (LSM) for activities given in **TABLE Q6**.

(5 marks)

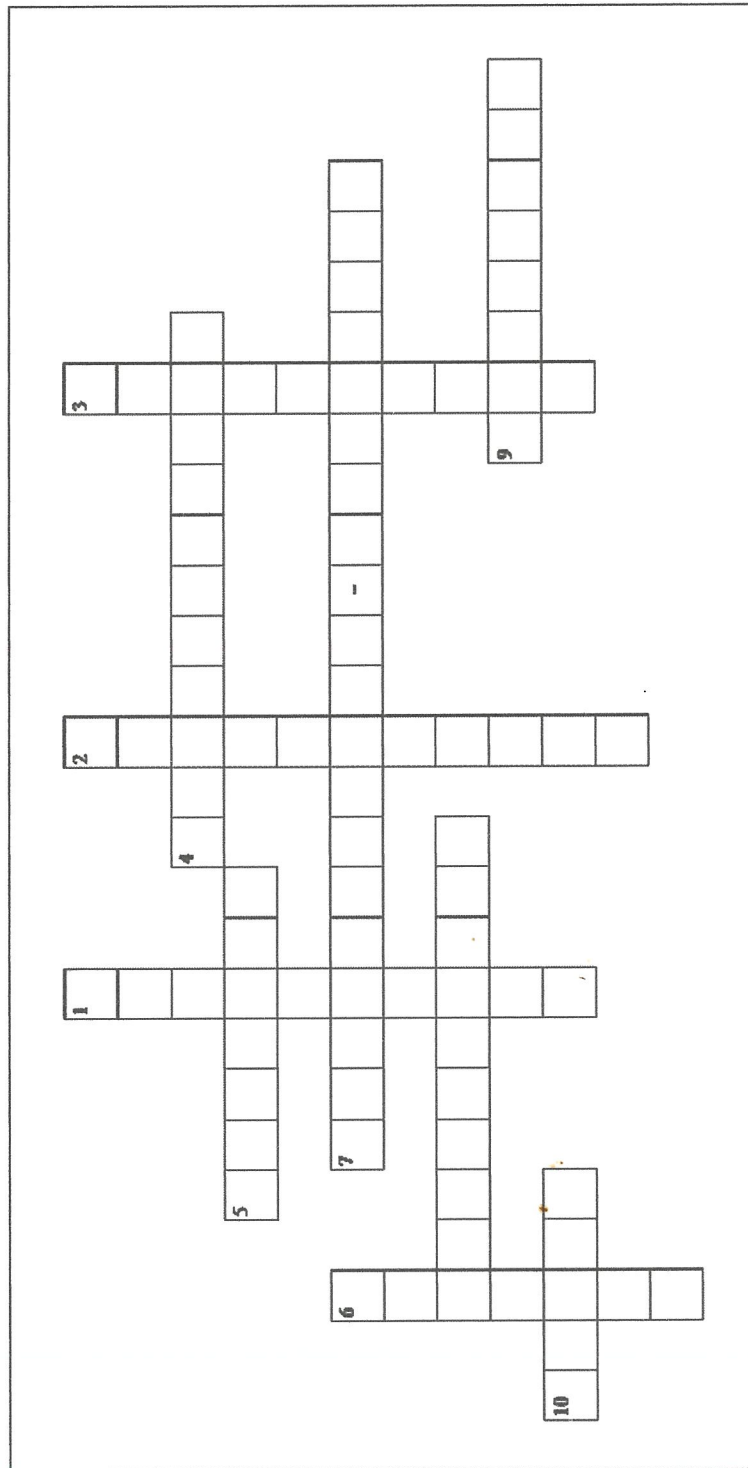
**– END OF QUESTIONS –**

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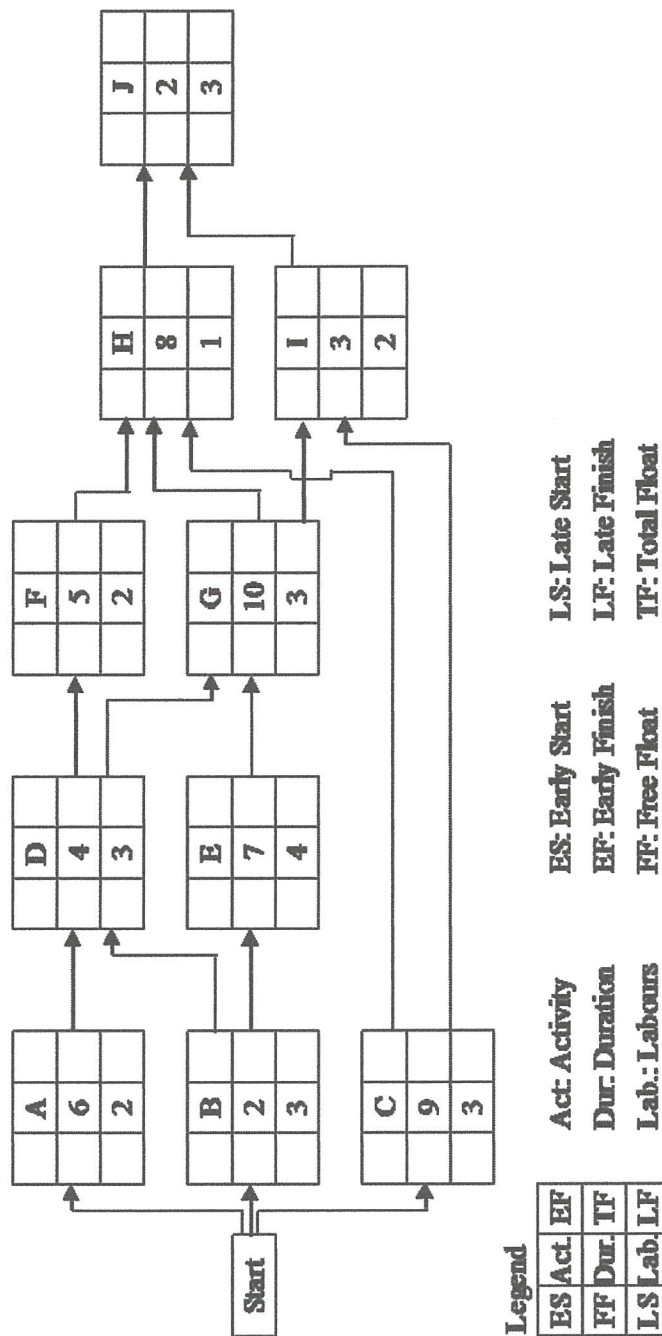
**FIGURE Q1**

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**FIGURE Q3**

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**TABLE Q4(a)**

Activity	Duration (days)	Successor(s)	Baseline Cost (RM)
A	6	D	12,000.00
B	2	D,E	3,000.00
C	9	I	9,000.00
D	4	F,G	6,000.00
E	7	G	3,500.00
F	5	H	14,000.00
G	10	H,I	25,000.00
H	8	J	7,200.00
I	3	J	4,500.00
J	2	-	2,800.00

Jan-19						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Feb-19						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

**Public Holiday**

21 Jan : Thaipusam  
 1 Feb: Federal Territory Day  
 5 Feb: Chinese New Year  
 6 Feb: Chinese New Year

**Working Hour**

Monday to Friday  
 08.00 am to 12.00 pm; 1.00 pm to 5.00 pm

**FIGURE Q4**

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**TABLE Q4(b)**

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
<b>Cumulative Actual Cost (RM)</b>	4,500	9,500	13,000	17,000	21,000	24,000	28,000	32,000
<b>Cumulative Earned Cost (RM)</b>	4,500	8,000	11,000	15,000	18,000	19,000	21,000	25,000

	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16
<b>Cumulative Actual Cost (RM)</b>	35,000	38,000	42,000	45,000	50,000	55,000	57,000	60,000
<b>Cumulative Earned Cost (RM)</b>	28,000	30,000	35,000	36,000	38,000	40,000	42,000	48,000

**TABLE Q5**

Activity	Predecessor(s)	Duration (days)		Cost (RM)	
		Normal	Crash	Normal	Crash
A	-	7	5	500	640
B	A	6	5	550	630
C	A	8	5	800	935
D	B	10	7	1,200	1,440
E	B,C	6	4	600	700
F	C	4	3	500	590
G	D,F	4	2	700	1,000
H	E,F	7	4	650	950
I	G,H	2	2	300	300

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**TABLE Q6**

<b>Activity</b>	<b>Daily Production (Linear Meter)</b>
A. Miling	2,000
B. Structural Course	1,000
C. Friction Course	800
D. Striping and Signage	1,200

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