Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2014/2015

COURSE NAME	:	PROJECT PLANNING AND SCHEDULING
COURSE CODE	:	BPD 33903
PROGRAMME	:	3 BPC
EXAMINATION DATE	:	JUNE 2015/JULY 2015
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1 It is common practice in construction projects to use the crashing technique to overcome project delay. **Table Q1** provides information related to a building project that is experiencing delay.

Table Q1 : Project Information

Activity	Pre-decessor	Normal Time (NT) (weeks)	Normal Cost (NC) (RM)	Crash Time (CT) (weeks)	Crash Cost (CC) (RM)	Crash Cost per week (CC-NC/NT-CT) (RM)
A	-	6	200	4	500	
B	A	5	300	3	600	
C	A	4	100	2	300	
D	A	8	400	4	600	
E	B,C	4	700	2	1,000	
F	C	3	200	1	300	
G	D	4	300	3	400	
H	E	3	500	2	600	
I	F,G	3	400	1	600	
J	H,I	3	200	2	500	
K	J	2	300	1	400	

(a) Prepare a precedence network diagram using the critical path method (CPM) for the building project according to the original project information provided in **Table Q1**.

(8 marks)

(b) Use the crashing method in order to resolve the problem of completing the building project according to the project information provided in **Table Q1** within a required period of 24 weeks without using the splitting or multitasking techniques.

(i) Explain the slope technique in choosing the activity to crash in **Table Q1**.

(4 marks)

(ii) Prepare an updated CPM diagram after crashing the project that is to be completed within a period of 24 weeks.

(6 marks)

(iii) Prepare a project information table based on the 24 weeks crashed project data, including the individual activity costing and final costing.

(7 marks)

Q2 Construction project management tools and techniques are used to achieve levels of performance according to time, cost and quality.

(a) Critical Path Method (CPM) technique is a tool to assist in the planning and scheduling management of projects.

(i) Describe **TWO (2)** advantages of the CPM technique.
(4 marks)

(ii) Describe **TWO (2)** disadvantages of the CPM technique.
(4 marks)

(b) Explain the project performance measures listed below that are used to control construction projects:

(i) Budgeted Cost of Work Scheduled (BCWS)
(3 marks)

(ii) Earned Value (EV)
(3 marks)

(iii) Actual Cost of Work Performed (ACWP)
(3 marks)

(c) In the measurement of construction progress, trends can be tracked through various indices.

Discuss **TWO (2)** such indices, and provide examples of graphs involving these indices that can be useful for trend analysis.
(8 marks)

Q3 (a) Construction project information that is accurate and easy to access during monitoring and decision making can help in productivity improvement of a project and minimize delay.

Explain the following reports that are used in the process of monitoring and decision making.

(i) Weekly reports

(2 marks)

(ii) Monthly reports

(2 marks)

(iii) Trend reports

(2 marks)

(b) Completing a construction project within the specified completion period, especially for complex projects, poses a major challenge for the proejct manager. Delay in completing the project according to the specified completion period can be classified into three categories.

Explain the **THREE (3)** categories of project delay.

(6 marks)

(c) One of the methods that can be used for the purpose of project planning that has repetitive activities is that of Linear Scheduling. The following information in **Table Q3** below refers to a piping project of 6,000 m length.

Table Q3: Productivity and Duration of Piping Project Activities

ID	Activity	Productivity (meter per day)	Activity Precedence
1	Land Survey and Layout	600	-
2	Site Clearance	500	1
3	Trench Excavation	200	2
4	Pipe Laying	300	3
5	Backfill	250	4

(i) Prepare a Velocity Diagram using graph paper provided to indicate clearly activities that are scheduled to have a conflicting situation.

(6 marks)

(ii) Prepare a Velocity Diagram stating clearly the buffer between subsequent activities that needs to be considered in the planning and scheduling answer to **Q3(b)(i)** in order to avoid conflicts.

(5 marks)

(iii) Identify the estimated completion period for the project planned in **Q3(b)(ii)** that does not have conflicts.

(2 marks)

Q4 (a) Analyse the importance of having clear project definition during the early phases of a project using **Figure Q4(a)** below.

(8 marks)

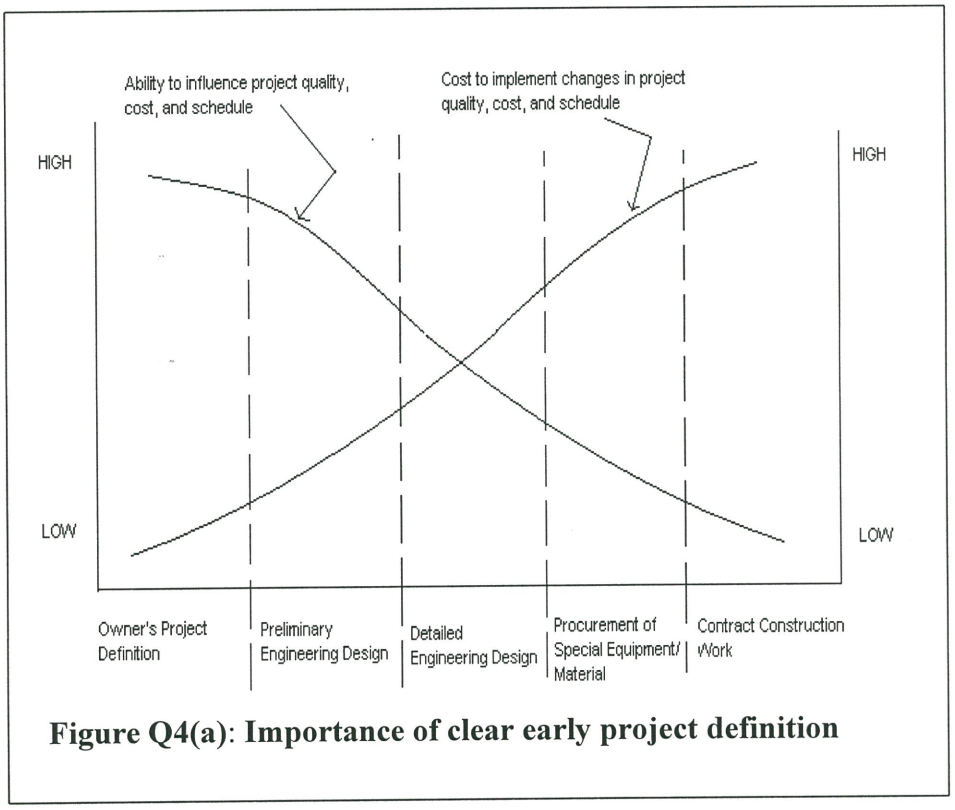

Figure Q4(a): Importance of clear early project definition

(b) Resource management is a part of programme planning or network planning for a construction project.

List the **FIVE (5)** steps that are required for performing resource planning.

(5 marks)

(c) Mr Lee, the owner of a proposed fishing farm wants to complete excavating 3 fish ponds in 3 weeks. The cost for excavating each pond is RM1 000. However, at the end of week 2 he has completed only 1 pond and spent RM3 000.

Analyse the schedule variance (SV) and cost variance (CV) for Mr. Lee's project and provide a graphical representation of the various S-curves for the above project based on week 2 analysis.

(12 marks)

- END OF QUESTION –