UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2010/2011

COURSE NAME	:	CONSTRUCTION PLANNING AND SCHEDULING
COURSE CODE	:	BFP4013
PROGRAMME	:	4 BFF
EXAMINATION DATE	:	APRIL / MAY 2011
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER FOUR (4) QUESTIONS ONLY.

THIS PAPER CONSISTS OF SEVEN (7) PAGES

Q1 (a) Explain **Four (04)** types of logical relationship used in project scheduling.

(4 marks)

(b) Elaborate **Two (2)** basic difference between arrow diagramming and precedence diagramming method with sketches.

(4 marks)

(c) A project has the following 7 activities as shown in **Table Q1(a).**

(i) Draw an AON schedule network;

(7 marks)

(ii) Indicate the EST, EFT, LST, and LFT of each activity in the AON network;

(4 marks)

(iii) Mark the critical path in the AON network;

(2 marks)

(iv) Calculate the TF, FF, IF of each activity and input them in the **Table Q1(b)**.

(4 marks)

Q2 (a) Project controling is one of the important aspect of project management. In order to control project, measuring the work progress plays very importnat role. Various methods are being practiced to measure work progress. Explain with examples any **Two (2)** methods of Determining Percent Complete for Individual Activities.

(4 marks)

(b) Updating schedule is a common practice in construction indurty. Describe what does mean by updated schedule and what kind of information is needed to update the schedule.

(6 marks)

(c) Define Line of Balance (LOB) method of project controlling. A road project has 40 same sections and each section has 8 activities. Suppose they are balance production. Each week has 40 working hours. The production curve, the lead time and planned progress chart are shown as in **Figure Q2(a), Figure Q2(b)** and **Figure Q2(c)** respectively. Calculate the LOB values (completed sections) of each control points at the **beginning** of fifth week.

(15 marks)

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Q3 (a) Describe any **Four (4)** criteria for selecting activities to crash.

(4 marks)

(b) Describe thr steps involved in the process of crashing the project duration.

(4 marks)

(c) A project has the following 6 activities. **Table Q3** shows the information of cost and working duration in normal and crash according to task and activities in a construction project

(i) Draw the network and Identify critical path

(8 marks)

(ii) Determine cost slope for each activity;

(6 marks)

(iii) If the total duration is to be reduced by 1 week; which activity or activities are to be reduced, what will be the total project cost?

(3 marks)

Q4 (a) Name the five basic methods for modelling the resources.

(3 marks)

(b) Describe serial and parallel allocation of resources.

(4 marks)

(c) Describe thr steps involved in resource leveling.

(3 marks)

(d) A project consists of SEVEN (7) activities which are arranged as a network in **Figure Q4(a)**. The resources that needed in each activity are given in **Table Q4(a)**. If number worker available is 35, do a resource leveling to check whether the projects can be accomplished with available number of worker.

(15 marks)

Q5 You are appinted as project manager for a housing project. You are responsible to achieve successful completion i.e. getting project completed within stipulated cost and on time achieving quality standards. Explain briefly any **five (5)** contents to the director of your organization:

      (i)   Advantages of project planning and scheduling;

(5 marks)

      (ii)   Objective and benefits of project controlling;

(5 marks)

      (iii)   Quality Management and various stages in process of quality management;

(5 marks)

      (iv)   Describe WBS. What benefits can be achieved by WBS?

(5 marks)

      (v)   Advantages of Bar charts

(5 marks)

      (vi)   Benefits of using project management software

(5 marks)

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Table Q1(a): Project Activities and their logical relationship

ACTIVITY	DURATION (DAYS)	PREDECESSOR
A	2	START
B	6	A
C	6	B
D	1	B
E	3	A
F	3	D,E
G	2	C (+2), F

Table Q1(b):

(vii)

Floats	A	B	C	D	E	F	G
TF							
FF							
IF							

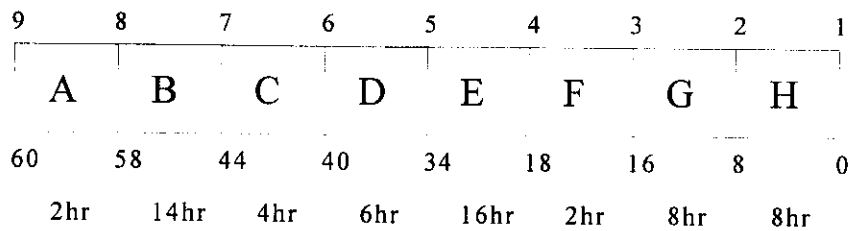| 9	8	7	6	5	4	3	2	1
A	B	C	D	E	F	G	H	
60	58	44	40	34	18	16	8	0
2hr	14hr	4hr	6hr	16hr	2hr	8hr	8hr	

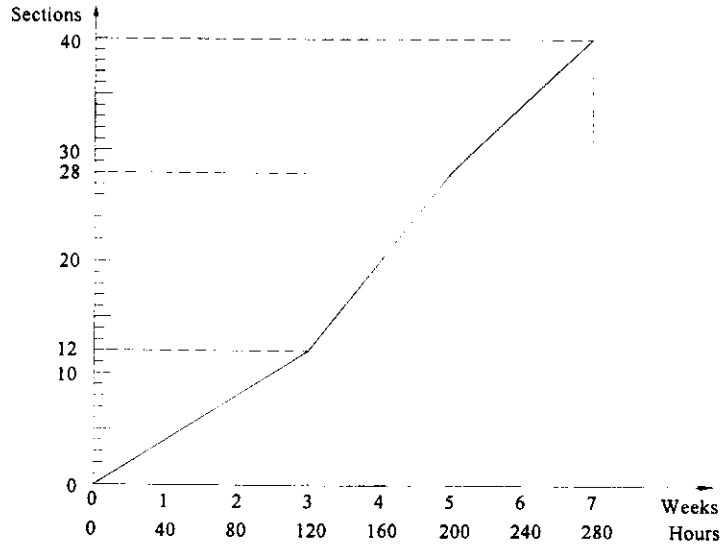**Figure Q2(a): Lead time of activities involved in road project**

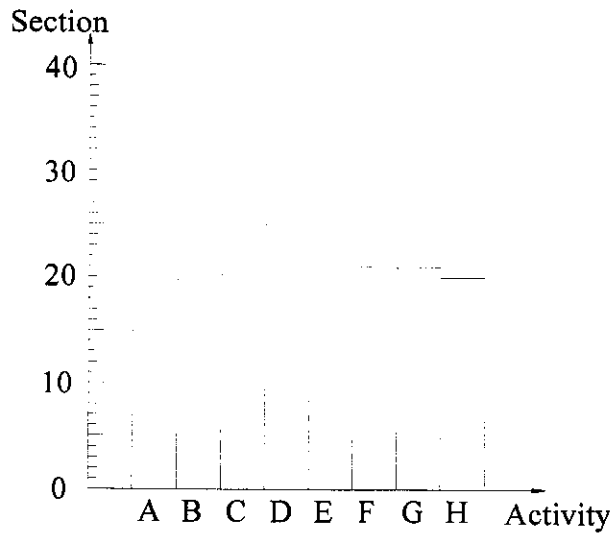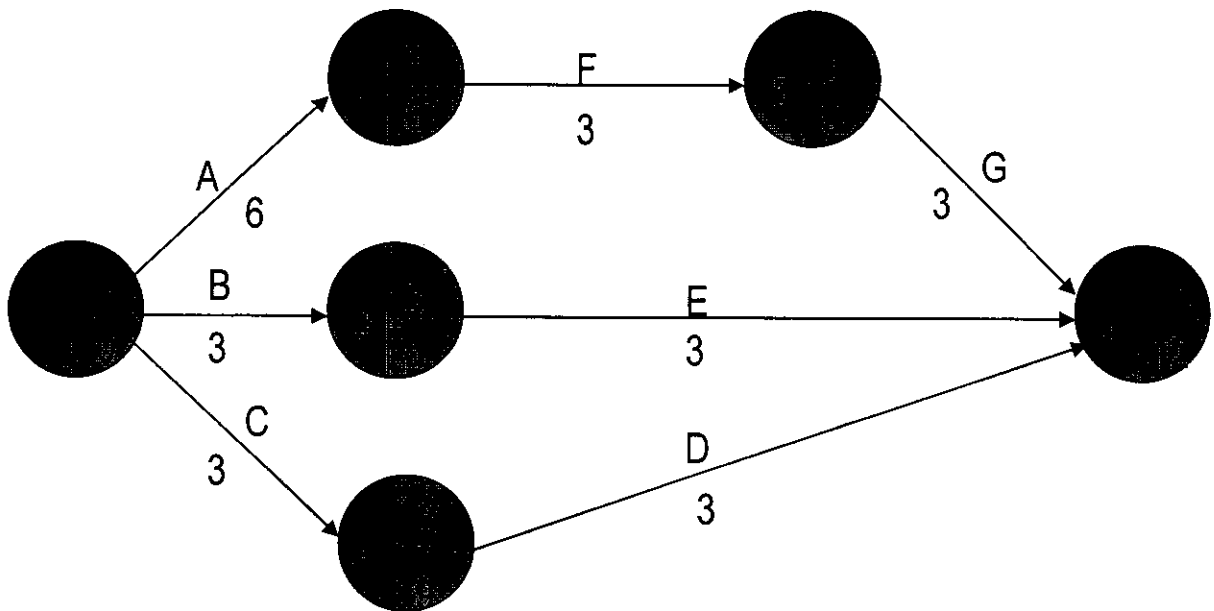**Figure Q2(b): Production curve of road project**

Figure Q2(c): Planned Progress Chart of road project

Table Q3: Information on cost and working duration in Normal and Crash Program

Activity	Normal Time (Weeks)	Crash Time (Weeks)	Normal Cost (MR)	Cast Cost (MR)
1-2	2	1	1500	1700
1-3	7	5	1200	2000
2-3	6	4	2400	3000
3-4	4	3	400	600
3-5	2	1	4000	4200
4-5	8	6	1500	2500

Table Q4: Detail of activities and labour requirement

Activity	Duration	Labour requirement
A	6 days	20 Persons
B	3 days	15 Persons
C	3 days	15 Persons
D	3 days	10 Persons
E	3 days	15 Persons
F	3 days	35 Persons
G	3 days	5 Persons

Figure Q4: Network of project