## **GUJARAT TECHNOLOGICAL UNIVERSITY** BE - SEMESTER-V • EXAMINATION – WINTER 2013

Subject Code: 152505 Subject Name: Project Management Time: 10.30 am - 01.00 pm Instructions:

Date: 09-12-2013

## **Total Marks: 70**

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Define: Project, Unique activities, Complex activities and Connected 07 activities. Briefly explain the scope triangle and state its usefulness.
  - (b) State and explain the principles of project management. State the phases of 07 project management.
- Q.2 (a) Define Work Breakdown Structure (WBS) and clearly state its purposes. 07
  - (b) Explain, Project Overview Statement (POS), Joint Project Planning(JPP) and 07 state their purposes

OR

- (b) Explain the methods for estimating activity duration and determining 07 resource requirement in brief.
- Q.3 (a) Define Project Network. State benefits of network. Explain the network 07 diagram using the Precedence Diagram Method (PDM).
  - (b) Define: A-O-A and A-O-N networks. Differentiate between A-O-A and A- 07 O-N

Networks.

Draw A-O-A and A-O-N diagrams for the relationship shown in table below. Determine project length and comment on the results.

Activity	Α	В	С	D	Е			
Immediate Predecessor			А	А	B,C			
Activity duration(days)	17	12						
OR								

- Q.3 (a) Explain CPM and PERT networks, Compare and state applications of both 07 networks in project management.
  - (b) Define and explain project management, activity, dummy activity and 07 critical activity, critical path, slack/float with examples.
- Q.4 (a) What is Fulkerson's rule? Explain the use of this rule by giving an example. 07 Suppose, the project has identified the interdependencies between the various activities and estimated activity durations(t) in days as follow:

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Activity	Α	В	С	D	Е	F	G	Η	
Duration	5	4	3	1	6	4	2	1	
Dependent upon			А	B &G	C&D	D	А	E	

i) Draw an appropriate network, ii) Number the events,

iii) Identify critical path, iv) Calculate project duration (T).

(b) State and explain basic rules for network logic. List the types of network 07 errors and explain by giving illustrations.

## OR

Q.4 (a) What is Slack? Explain in brief the significance of positive float, negative 07 float, and zero float. Define: Total float, Free float and Independent float.

(b) In a PERT network, the critical path comprises six activities, whose 07 estimated durations in days are given in table below.

Activity	1	2	3	4	5	6
Optimistic time (t <sub>o</sub> )	3	8	6	2	3	3
Most likely time (t <sub>L</sub> )	6	9	8	5	9	4
Pessimistic time (t <sub>p</sub> )	12	10	10	8	12	5
Average time (t <sub>e</sub> )	6.5	9.0	8.0	5.0	8.5	4.0

If the project is scheduled for completion within 42 days, what is the probability of achieving the schedule and not achieving due date?

Table of Normal Probability distribution

Z 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0							J			
	Ζ	0.10	Z 0.1	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Area 0.0399 0.7930 0.1179 0.1554 0.1915 0.2257 0.2580 0.	Area	0.0399	area 0.03	0.7930	0.1179	0.1554	0.1915	0.2257	0.2580	0.288

Q.5 (a) What do you mean by resource smoothing and resource leveling? For the following small project, carryout resource smoothing (without extending the project length). The activities, activity duration in days and number of workers required are given in table below,

Activity	12	13	14	16	25	34	45	56
Duration	2	2	2	4	3	2	3	4
Workers	3	6	4	9	8	7	2	1

i) Determine critical path and project length in days,

ii) Prepare load diagram for number of workers v/s duration,

iii) Determine number of workers required at a time,

iv) Determine the percentage utilization of resources after smoothing.

(b) What is crashing? In what ways crashing is a useful project management 07 tool?

Define: Crash time, Crash cost, Normal time, Normal cost and cost slope.

OR

Q.5 (a) A small project consists of the following details. All the cost data are in 07 thousands of rupees and all durations are in days.

Activity	1020	1030	2030	2040	3040
Normal time	3	4	2	5	6
Crash time	1	2	0	2	1
Normal cost	6	3	2	3	9
Crash cost	12	5	4	6	24
Cost Slope : (Rs./day)	3	1	1	1	3

Assume indirect cost rate = Rs.3 per day.

Determine: i) Normal project duration and corresponding project cost ii) Optimum project duration and corresponding project cost.

(b) What are work packages? State and explain the purposes of work packages. 07 Briefly explain the meaning of the project proposal.

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