

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

Subject Code: 152505**Date: 09-12-2013****Subject Name: Project Management****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

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 activities. Briefly explain the scope triangle and state its usefulness. **07**
- (b) State and explain the principles of project management. State the phases of project management. **07**
- 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 state their purposes **07**

OR

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

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	A	B	C	D	E
Immediate Predecessor	---	---	A	A	B,C
Activity duration(days)	8	13	5	17	12

OR

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

Activity	A	B	C	D	E	F	G	H
Duration	5	4	3	1	6	4	2	1
Dependent upon	---	---	A	B & G	C&D	D	A	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 errors and explain by giving illustrations. **07**

OR

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

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

Activity	1	2	3	4	5	6
Optimistic time (t_o)	3	8	6	2	3	3
Most likely time (t_L)	6	9	8	5	9	4
Pessimistic time (t_p)	12	10	10	8	12	5
Average time (t_e)	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	0.80
Area	0.0399	0.0793	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? 07

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	1--2	1--3	1--4	1--6	2--5	3--4	4--5	5--6
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 tool? 07

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 thousands of rupees and all durations are in days. 07

Activity	10--20	10--30	20--30	20--40	30--40
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. Briefly explain the meaning of the project proposal. 07
