

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: BE
BRANCH: ALL**

**SEMESTER : V
SESSION : MO/18**

SUBJECT: PE5011 PROJECT ENGINEERING

TIME: 3 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

- Q.1(a) What are the various project deliverables? Give one example for each type. [2]
 Q.1(b) Differentiate between a turnkey project and a greenfield project with suitable examples. [4]
 Q.1(c) Describe the role of commercial appraisal, technical appraisal and management appraisal in the success of projects. [6]
- Q.2(a) What is the need of an 'organizational structure' for a project? [2]
 Q.2(b) Write the pros and cons of a functional form of organization. [4]
 Q.2(c) Compare between matrix and modified-matrix structure of organization clearly stating the advantages and limitations. [6]
- Q.3(a) Define 'social cost-benefit analysis' of a project. [2]
 Q.3(b) What do you know by the iron triangle of project? Give a description. [4]
 Q.3(c) Explain the life cycle of a project along with the detailed activities in each stage. [6]
- Q.4(a) What is a Gantt chart and what are the limitations of it? [3]
 Q.4(b) Construct the project network (activity on arc type) [9]

Activity	Immediate Predecessors	Duration (Days)
A	--	2
B	A	6
C	A	3
D	B	1
E	B	6
F	C, D	3
G	E, F	2

- (i) Identify the critical path.
 (ii) Find the free and independent float for each activity and present in a tabular form.
 (iii) What is the effect of delaying activity D by three days?
- Q.5(a) Why a dummy activity is used in a network? [2]
 Q.5(b) Differentiate between PERT and CPM by clearly indicating their distinguishing features. [4]
 Q.5(c) Differentiate among total, free and independent floats of activities. Explain how these floats are utilized by different level of management. [6]
- Q.6(a) Explain the meaning of crashing of a project. [2]
 Q.6(b) Construct a PERT network for the given data and find the mean and standard deviation of each path in the network. How the probability of project completion can be found? [10]

Activity	t_o (Optimistic)	t_m (Most likely)	t_p (Pessimistic)	Immediate Predecessor
A	2	3	4	--
B	3	4	5	--
C	4	6	8	--
D	3	5	7	A
E	1	1	1	B
F	5	6	7	B
G	5	7	9	C, D, E

- Q.7(a) Discuss about the time-cost trade-off and explain the role of fixed cost in finding the least-cost [4]
schedule of a project.
- Q.7(b) Explain the meaning of the term Line of Balance (LOB) in the context of project scheduling [4]
- Q.7(c) Describe the 'resource levelling' function of project manager and the various constraints [4]
associated with it.

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