

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

**CLASS: BARCH
BRANCH: ARCHITECTURE**

**SEMESTER : IX/ADD
SESSION : MO/18**

SUBJECT: AR9103-CONSTRUCTION MANAGEMENT

TIME: 03:00

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.
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- Q.1(a) Define construction management. [2]
 (b) What are the various classifications of project? [4]
 (c) Describe in detail 'The Project Life Cycle'. [6]
- Q.2(a) What are the short comings of Bar Chart Technique? [2]
 (b) Write a short note on following: [4]
 (i) Resource Smoothing
 (ii) Resource Levelling
 (c) Develop the bar chart end estimate the project completion time. Divide the whole project in four equal phases and hence derive the cost histograms [6]

Activity	Duration (Days)	% Age Cost	Inter - Relation
A	7	21	Starting Activity
B	4	16	Start after 3 days of A start
C	11	22	Start with B
D	3	21	Can Start with B & C
E	4	8	Start after C & D
F	2	12	Start after E

- Q.3(a) Draw the CPM network for the project with following activities and characteristics given in table 1. [2]

Activity	Immediate Successor	Duration (Days)
A	C,D	6
B	E,G	8
C	E,G	4
D	G	3
E	F	6
F	-	2
G	-	10

Table 1

- (b) For the project given in table 1, find the project duration and the critical path. [4]
 (c) For the project given in table 1, calculate the floats of each activity. [6]
- Q.4(a) 'PERT is best to be adopted in scientific research projects' - justify. [2]
 (b) If the critical path of a project is 20 months along with a standard deviation of 4 months, what is the Z factor for the project to be completed within: (a) 20 months (b) 18 months (c) 24 months? [4]
 (c) A construction project includes activities as per the table below. The event nodes and three PERT times are listed below. Establish the PERT network and find the Z factor of completion of the project within 30 days. [6]

Activity	Event - Nodes	PERT times (days)	Activity	Event - Nodes	PERT times (days)
A	1-2	2-5-14	G	4-5	1-3-5
B	1-3	3-6-15	H	5-6	2-3-10
C	2-4	DUMMY	I	5-7	2-3-4
D	3-4	1-2-3	J	5-8	4-7-16
E	2-6	7-10-25	K	6-8	4-6-14
F	3-7	4-11-12	L	7-8	4-6-20

- Q.5(a) Differentiate between Discounted and Non-discounted Cash Flow Criteria [2]
(b) Explain briefly about CAT & RAT schedule with suitable graph. [4]
(c) Followings are the two alternative of a certain project. Discuss the feasibility of the alternatives based on PBP and NPV. [6]

Project: I

Initial investment: Rs 25,000

Return for first and second year: Rs 5,000 (each)

Return for third and fourth year: Rs 12,000 (each)

Project: II

Initial investment: Rs 30,000

Return for first to fourth year: Rs 10,000 (each)

(Take the Discount rate as 10% for both the alternative)

- Q.6(a) Define Line of balance. [2]
(b) Explain Direct, Indirect and total cost component of Project along with proper graphical representation. [4]
(c) Explain the cost slope and its implication in calculation of optimum cost of the project. [6]

- Q.7(a) What are the basic elements of Quality in construction? [2]
(b) What are the reasons for safety management? [4]
(c) Discuss the various types of equipments used for concreting operation. [6]

*****26.11.18*****M