

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

CLASS: BTECH/BARCH
BRANCH: BT/CHEMICAL/CIVIL/CSE/IT/ECE/MECH/BARCH

SEMESTER : V
SESSION : MO/2023

SUBJECT: PE309 PROJECT MANAGEMENT

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 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) | Differentiate between forward and backward integration, green-field and brown-field projects with suitable examples for each. | [5] 1 | 2 |
| Q.1(b) | Explain project life cycle by giving at-least FOUR important distinct activities in each stage. Mention about any feedback mechanism existing in project life cycle. | [5] 1 | 3 |
| Q.2(a) | Compare a Functional and a Product organizational structure by mentioning pros and cons for each. Draw typical figures for both. | [5] 2 | 2 |
| Q.2(b) | Describe Break-even and Make-or-Buy decision making using their various costs/price and calculations thereof. How are these two techniques related to project management? | [5] 2 | 3 |
| Q.3(a) | Write about FOUR main environmental issues related to the activities of a typical industrial project. How do environmental appraisal and action plans try to address these issues? | [5] 3 | 2 |
| Q.3(b) | An auto company is planning for a new plant by acquiring agricultural land from some private owners. While conducting a Social-Cost-Benefit Analysis for this project, list some of the potential Direct, Indirect and External costs and benefits separately. | [5] 3 | 4 |
| Q.4(a) | A project consisting of 8 activities are given here. The cost for completing these 8 activities is INR 580 lakh excluding the overhead cost. The overhead cost of the project is INR 16 lakh per day.
(i) Calculate the normal completion time and cost of the project.
(ii) Find the minimum project completion time and the associated cost. | [6] 4 | 3 |

Activity	Normal time	Crash time	Crash cost/day (lakh)
A (1-2)	6	4	80
B (1-3)	8	4	90
C (1-4)	5	3	30
D (2-4)	3	3	--
E (2-5)	5	3	40
F (3-6)	12	8	200
G (4-6)	8	6	50
H (5-6)	6	6	--

- Q.4(b) Refer to the Table given in question 4(a). Construct the network diagram using the normal time for the activities. Calculate total, free and independent floats for all the activities and present them in a table form. How are the three different floats utilized during project management? [4] 4 3

- Q.5(a) Construct a PERT network (activity-on-arc) for the given data and find the mean and standard deviation of critical path(s). [6] 5 3

Activity	(Optimistic)	(Most likely)	(Pessimistic)	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.5(b) Compare between Critical Path method (CPM) and PERT approach in project scheduling. Explain the concept of Time-Cost trade-off with reference to project crashing. [4] 5 4

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