UPES, Dehradun
END SEMESTER EXAM, MAY 2023

Course: Construction Management Practices, PEL-II   **SEM – II**
Program: M. Tech (Structural Engineering)   **Time: 03 hrs**
Course Code: CIVL 7017   **Max. Marks: 100**

Instructions: Assume necessary data if required.

SECTION A

S. No.		Marks	CO
Q.1	Define construction and construction management with suitable example.	4	CO1
Q.2	Distinguish between PERT & CPM.	4	CO2
Q.3	Define and explain (1) pessimistic time (2) Optimistic time (3) Most Probable time.	4	CO3
Q.4	Describe financial aspects related to construction equipments.	4	CO4
Q.5	What is meant by depreciation? List the methods to find depreciation.	4	CO4

SECTION B

Q.6	Discuss objectives of construction management and explain planning, scheduling, and controlling as a function of construction management.	10	CO2
Q.7	Compare two alternatives available for using equipment on construction project site for project duration of 8 (eight) years. Alternative A : Buy new equipment at first cost of Rs. 50,00,000/-with net annual return of Rs. 09,00,000/- and salvage value of @ 10 % of its first cost. Alternative B : Buy second hand equipment at cost of Rs. 30,00,000/- with net annual return of Rs. 6,00,000/- and useful life of 4 (four) year with 0 (zero) salvage value. Additional Information: At present market value of 4 (four) year old new equipment is @ 34,00,000/-. and M.A.R.R. = 18 %.	10	CO5
Q.8	From following information determine the cost of production (excavation and hauling) in terms of Rupees per Cubic meter. • Excavating equipment: Hoe with 1.33 m^3 dipper (can handle 1.51 m^3) having cycle time of 16 seconds and operating factor of 55 minute per hr. Cost Rs. 3500 per hr) • Material: good common earth with swell of 20 % and fill factor of 0.85. • Hauling Units: Trucks 8.5 m^3 (b.m.) capacity with operating factor of 50 minutes per hr and having round trip time 22 minutes. (Cost Rs. 400 per hr.)	10	CO5
Q.9	Explain, why time cost trade off is necessary? Discuss various ways to reduce the activity duration. **OR** Explain the necessity of labour legislation. Explain any two labour laws.	10	CO4

SECTION-C

Q.10	(a) Explain cash flow diagram and its importance with suitable example. (b) For the network having following details determine optimum duration and corresponding minimum cost considering Indirect cost = Rs. 2500 / week		

Activity	Normal cost (Rs)	Normal duration (week)	Crash cost (Rs)	Crash duration (week)
1-2	5500	5	7500	3
1-3	8000	7	12000	5
1-4	6000	6	8000	5
4-5	9000	9	10500	6
2-5	8000	6	8800	4
3-5	5000	5	6000	3

OR

(a) Discuss the importance of safety in construction sites. Describe some common causes of accidents.

(b) For a small project the following data is available.

I node	1	1	2	3	4	4	4	5	6	7
J node	2	3	3	4	5	6	7	7	7	8
Normal	10	13	4	6	0	5	9	7	3	3
Crash	9	10	3	4	0	4	7	5	3	2
Normal	1000	780	400	320	0	4	7	5	3	2
Crash	1200	900	470	410	0	300	810	580	30	400

Assuming indirect cost as Rs.50 per day determine
(i) Normal Project duration and corresponding project cost.
(ii) Optimum Project cost and corresponding project duration.
(iii) Minimum project duration and corresponding project cost.

Marks: 10+10 =20 **CO3**

Q.11	(a) State Rules for drawing network. Explain with suitable examples, errors in AON networks. (b) A small project consists of twelve activities. Interrelationships amongst various activities are as follows: • Activity A is starting activity and proceeds activities B, C and D. • Activity E depends on activities B and C • Activity F follows activities C and D. • Activities G and H can start as soon as activity D is completed. • Activity I succeed activities G, E and F. • Activities J and K can start only when activities H and I are completed. • Activity L is the last activity, and it succeeds activities J and K. • Prepare dependency table and draw AOA diagram.

Marks: 20 **CO4**