

IV B.Tech I Semester Advance Supplementary Examinations, March - 2023

PROJECT MANAGEMENT

(Open Elective)

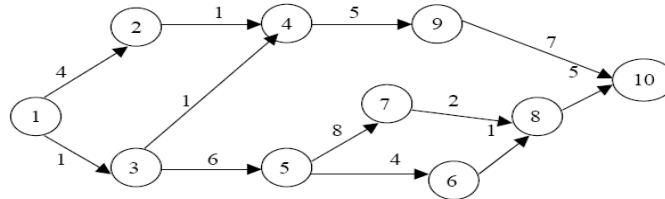
Time: 3 hours

Max. Marks: 75

*Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks*

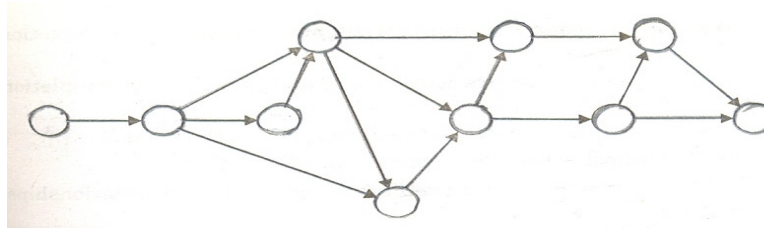
UNIT-I

- 1 a) Discuss the necessity and various steps involved in Construction Planning and Scheduling. [7]
 b) Calculate the total duration of the project. State the critical path and critical activities of the below network. [8]



(OR)

- 2 a) Using Fulkerson's rule, number the events of the network shown in the figure below. [5]



- b) A project has the following activities, precedence relationships, and activity durations:

Activity	Immediate Predecessors	Activity Duration (Days)
A	-	3
B	A	5
C	A	7
D	B	6
E	B	10
F	C	5
G	E, F	8
H	G	6
I	G	3
J	H	12
K	I	4
L	J, K	7

[10]



- (i) Construct a CPM network for the project.
- (ii) Construct a table showing for each activity, its activity duration, earliest start time, latest start time, earliest finish time, latest finish time, and the activity slack
- (iii) Identify those activities comprising the critical path.

UNIT-II

- 3 a) Explain the procedure and steps involved in the application of PRIMAVERA software for construction projects. [7]
- b) Draw a typical cost-duration curve and show on it optimum duration and minimum project cost. [8]

(OR)

- 4 a) Exemplify the significance of resource levelling and smoothing in construction industry with suitable example. [7]
- b) (i) If the expected time along the critical path of a project is 27 weeks and the standard deviation along it is 6 weeks, determine the probability of completing the project within (a) 24 weeks and (b) 40 weeks.
- (ii) A construction manager notices while unloading cement bags at the site that, it takes not less than 4 minutes for one setoff unloading, sometimes as much as even 12 minutes and 6 minutes was more frequent. Treating this as an activity in PERT project estimate the expected duration of unloading. [8]

UNIT-III

- 5 a) Explain in detail the economical considerations, limitations, advantages and disadvantages of major construction equipments. [7]
- b) Mention the guidelines for possible choices of Earthmoving equipments. [8]

(OR)

- 6 a) Discuss in detail various methods adopted for rating the capacities of trucks. [7]
- b) Determine the total time, total cost, and the cost/unit of transporting the sand, when 200 tons of sand with a density of 1.75 ton/m^3 is transported 6.5 km using a 10 m^3 dump truck. Assume two labourers and a driver to load the truck at a rate of $1.3 \text{ m}^3/\text{hr}$. The haul speed is 25 km/h and return speed is 30 km/h. It takes 4 min to unload the truck. The cost of the truck is Rs.250/hr, the driver is Rs.75/hr, and the labourer is Rs.30/hr. The actual working time is 40 min in one hr. [8]

UNIT-IV

- 7 a) Classify the types of Concrete Mixing equipments. [7]
- b) An experienced operator has to excavate wet gravel with a dragline capacity of 3.5 m^3 . The boom length is 18 m and the swing angle will be 120 degrees. The material is dumped onto stockpile. Actual working time is 50 min per hour. [8]

(OR)

- 8 a) A power-shift crawler tractor has a rated blade capacity of 8.50 Lm³. The dozer is excavating loose common earth and pushing a distance of 61 m with speed of 4.5 km/hr. Maximum reverse speed in third range is 7.5 km/hr. Estimate the production of the dozer, if job efficiency is 45 min/hr. [7]
- b) Mention the main factors governing the output of a motor grader. [8]

UNIT-V

- 9 a) Discuss the role of BIM software in the construction industry. Also highlight the present and future scenarios. [7]
- b) What are the economic considerations to be kept in mind while selecting the piling system? Explain. [8]

(OR)

- 10 a) Elucidate the structure, functions and behaviour of BIM software. [7]
- b) Illustrate the equipments essential and the process involved in placing of concrete. [8]

