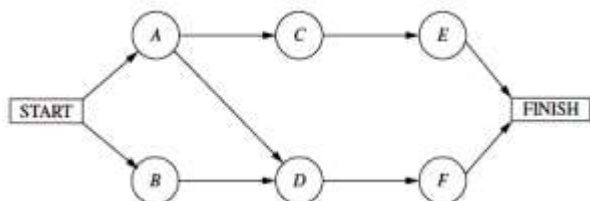


Solve the Following Questions

Question #1: (20 Points)

The Northern Borders Co. needs to undertake a major maintenance and renovation program to overhaul and modernize its facilities for wafer fabrication. This project involves six activities (labeled A, B, . . . , F) with the precedence relationships shown in the following network.



Activity	Estimated Duration	Estimated Cost
A	6 weeks	\$420,000
B	2 weeks	\$180,000
C	4 weeks	\$540,000
D	5 weeks	\$360,000
E	7 weeks	\$590,000
F	9 weeks	\$630,000

- Find the earliest times, latest times, and slack for each activity.
What is the earliest finish time for the completion of the project?
- Display the budget and schedule of costs based on earliest start times for this project on a single sheet.
- Use results in part (b) to draw a figure to show the schedule of cumulative project costs when all activities begin at their earliest start times.
- After 5 weeks, activity B has been completed (with an actual cost of \$220,000), activity A is 60 % completed (with an actual cost to date of \$200,200), and activity D is 55 % completed (with an actual cost to date of \$210,050). Construct a PERT/Cost report after week 5. Where should the project manager focus her attention to improve cost performances?

Question #2: (5 Points)

Match the following two groups

A	A project is resource constrained	in situations where the critical path is delayed and the addition of resources can bring the project back on schedule and the project completed by the required date	1
B	Resource definition	we attempt to ensure that the demand for resources does not exceed availability	2
C	Resource allocation,	addresses the problem of the optimum use and timing of the assignment of these resources to the various project activities	3
D	Resource aggregation	involves identifying the critical resources that need to be planned and managed for the successful completion of the project.	4
E	Resource leveling	involves determining the aggregate resources that will be needed, period by period, to complete all project activities.	5
F	A project is classified as time constrained	if the level of resource availability cannot be exceeded	6

Question #3: (15 Points)

Rank the preference order for the following four alternatives using (TOPSIS) Technique (Technique for Order Preference using Similarity to Ideal Solution)

	X1	X2	X3	X4	X5	X6
A1	2.3	1400	20,000	5.5	5	9
A2	2.7	2700	18,000	6.5	3	8
A3	1.8	2000	21,000	4.5	7	7
A4	2.2	1700	20,000	5.2	5	5

Weightings

0.2	0.1	0.2	0.1	0.1	0.3
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Where:

A1, A2, . . . , and A4 are the alternatives

X1, X2, . . . , and X6 are the Screening criteria

(X4 is a cost criterion, others are benefit criteria)