PVP 19

Code: 19ME2701B

IV B.Tech - I Semester – Regular Examinations - DECEMBER 2022

PROJECT MANAGEMENT & OPTIMIZATION

(Common for CE, EEE, CSE)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1. a)	List project life cycle phases.	L1	CO1
1. b)	What are the three time estimates in PERT?	L2	CO2
1. c)	What is schedule performance index?	L2	CO3
1. d)	What is degeneracy in simplex method?	L2	CO4
1. e)	What is the condition for basic feasible solution in transportation problem?	L2	CO5

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	Explain characteristics of a project.	L2	CO1	6 M
	b)	Write rules for drawing network diagram.	L2	CO1	6 M
OR					
3	a)	What is Work Break Structure(WBS)? Explain.	L2	CO1	6 M
	b)	Explain the construction of GANTT chart.	L2	CO1	6 M

UNIT-II

4 | | The following table gives the activities and other relevant data for the project. | L4 | CO2 | 12 M

Activity	Normal time (Days)	Crash time (Days)	Normal cost (Rs.)	Crash cost (Rs.)
1-2	4	3	600	800
1-3	2	2	400	400
1-4	5	4	750	900
2-3	7	5	400	600
2-5	7	6	800	1000
3-5	2	1	500	650
4-5	5	4	600	850

Indirect cost per day for the project is Rs.200

I. Draw the network of the project.
II. Find the normal duration and cost of the project.
III. Find the optimum duration and cost of the project.

OR

5 | | Draw a network diagram and calculate EST, LST, EFT, LFT and total float, free float, Independent float and find the critical path for the following: | L4 | CO2 | 12 M

Activity	1-2	2-3	3-5	2-4	4-5	5-6
Duration	4	6	5	4	3	3

UNIT-III

6 | a) | What are the various options to accelerate project completion? Explain. | L3 | CO3 | 6 M

b) | Explain how to calculate total cost of project. | L3 | CO3 | 6 M

OR

<table>
<tr><td rowspan="2">7</td><td>a)</td><td>Describe the various parameters to measure project performance? Explain.</td><td>L3</td><td>CO3</td><td>6 M</td></tr>
<tr><td>b)</td><td>Distinguish between Cost Variance and Schedule Variance?</td><td>L3</td><td>CO3</td><td>6 M</td></tr>
<tr><td colspan="6">UNIT-IV</td></tr>
<tr><td>8</td><td></td><td>An electronic company manufactures two television models each on a separate production line. The daily capacity of I line is 60 and that of II line is 75 Televisions. Each unit of the model I uses 10 pieces of a certain electronic Component, whereas each unit of model II requires 8 pieces of the same component. The maximum daily availability of the special component is 800 pieces. The profit per unit for models I and II are Rs.30 and Rs.20 respectively. Formulate this problem as linear programming model. Using graphical method, determine the optimum daily production of the two models.</td><td>L4</td><td>CO4</td><td>12 M</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>9</td><td></td><td>Find the sequence for the following eight jobs as shown in the following table that will minimize the total elapsed time for the completion of all jobs. Each job is processed in the order of C-A-B. Calculate the minimum elapsed time and idle time.
<table>
<tr><td rowspan="2">Machine</td><td colspan="8">Jobs</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td>A</td><td>4</td><td>6</td><td>3</td><td>4</td><td>5</td><td>3</td><td>6</td><td>2</td></tr>
<tr><td>B</td><td>8</td><td>10</td><td>7</td><td>8</td><td>11</td><td>8</td><td>9</td><td>13</td></tr>
<tr><td>C</td><td>5</td><td>6</td><td>2</td><td>3</td><td>4</td><td>9</td><td>15</td><td>11</td></tr>
</table></td><td>L4</td><td>CO4</td><td>12 M</td></tr>
</table>

UNIT-V

10 a) A furniture company has plants in cities A,B and C, which ship to four demand locations1,2,3, 4 with transporting costs (in hundred rupees) as shown in the following table. Determine minimum total transportation cost. L4 CO5 12 M

Supply	Location				
	1	2	3	4	Capacity
A	3	5	7	4	50
B	6	8	5	2	50
C	1	9	7	3	50
Requirement	20	60	30	40	

OR

11 Dispatcher of the police department has received four requests for police assistance. Currently, six patrol-cars are available for assignment and the estimated response time (in minutes) are shown in table that follows. L4 CO5 12 M

Incident	Patrol Unit					
	1	2	3	4	5	6
I	6	5	3	4	5	6
II	8	6	2	3	7	6
III	4	4	7	6	5	5
IV	3	7	9	8	4	7

(a) Which patrol unit should respond?

(b) What will be average response time?