

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)
M.E. DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025
Second Semester
Construction Engineering and Management
CN4202 / PCNT2422 - Construction Planning, Scheduling, and Control
Regulations – 2021/2024

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	List the key factors in choosing a construction technology and method.	L1	1	2
2.	How is a project schedule and budget planned in construction management?	L1	1	2
3.	Illustrate the significance of a Gantt chart in project scheduling.	L2	2	2
4.	Outline the concept of the Critical Path Method (CPM) in network analysis.	L2	2	2
5.	Develop the purpose of the Precedence Diagramming Method (PDM).	L3	3	2
6.	How does PDM help in project monitoring and control?	L1	3	2
7.	Organize the role of a bar chart in work scheduling.	L3	4	2
8.	What is crashing in project scheduling, and how does it impact cost and time?	L1	4	2
9.	Compare the differences between direct and indirect cost control in construction.	L2	5	2
10.	How does earned value management help in project progress monitoring?	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.N o	Questions		BLT	CO	Marks																		
11.	a	i Explain the various factors affecting the development of construction plans.	L2	1	8																		
		ii Describe different methods of defining precedence relationships among activities.	L2	1	8																		
Or																							
	b	A construction project consists of the following activities:	L2	1	16																		
		<table><tr><th>Activity</th><th>Predecessor</th><th>Duration (days)</th></tr><tr><td>A</td><td>-</td><td>5</td></tr><tr><td>B</td><td>A</td><td>7</td></tr><tr><td>C</td><td>A</td><td>4</td></tr><tr><td>D</td><td>B, C</td><td>6</td></tr><tr><td>E</td><td>D</td><td>3</td></tr></table>	Activity	Predecessor	Duration (days)	A	-	5	B	A	7	C	A	4	D	B, C	6	E	D	3			
Activity	Predecessor	Duration (days)																					
A	-	5																					
B	A	7																					
C	A	4																					
D	B, C	6																					
E	D	3																					
		(i) Draw the project network diagram.																					
		(ii) Determine the total project duration if all activities start																					

at the earliest possible time.

12. a i Differentiate between various types of network techniques used in project scheduling. L4 2 6
- ii Examine the significance of floats and their types in project scheduling. L4 2 10

Or

- b The following table provides information for a project: L4 2 16

Activity	Duration (days)	Immediate Predecessor
A	4	-
B	6	A
C	5	A
D	8	B, C

(i) Draw the network diagram using the Critical Path Method (CPM).

(ii) Calculate the Earliest Start (ES), Latest Start (LS), Earliest Finish (EF), Latest Finish (LF) times for each activity and determine the critical path and project duration.

13. a i Organize the steps involved in the Precedence Diagramming Method (PDM) representation. L3 3 8
- ii Build the advantages of using PDM over traditional network diagramming methods. L3 3 8

Or

- b A project consists of the following activities and time estimates: L3 3 16

Activity	Optimistic Time (to)	Most Likely Time (tm)	Pessimistic Time (tp)
A	3	6	9
B	2	5	8
C	4	6	10
D	5	9	13

(i) Compute the Expected Time (TE) and Variance for each activity

(ii) Solve the total expected project duration.

14. a i Develop the Network-Based Project Scheduling technique with a suitable example. L3 4 8
- ii Identify the significance of the Line of Balance Scheduling method for repetitive projects. L3 4 8

Or

- b A project manager wants to crash the following project activities. The normal and crash durations, along with the associated costs, are given below: L3 4 16

Activity	Normal Duration (days)	Crash Duration (days)	Normal Cost (\$)	Crash Cost (\$)
A	6	4	5000	7000
B	5	3	4000	6000
C	8	5	6000	9000

D	7	4	5500	8500
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(i) Solve the cost slope for each activity

(ii) Identify which activities should be crashed first to minimize cost while reducing project duration.

15. a i Dissect the various techniques used for cost control in construction projects. L4 5 10
- ii Simplify the role of financial accounting systems in project cost management. L4 5 6

Or

- b A construction project has the following Earned Value (EV), Planned Value (PV), and Actual Cost (AC) data at a certain point in time: L4 5 16

Parameter	Value (\$)
Earned Value (EV)	50,000
Planned Value (PV)	55,000
Actual Cost (AC)	48,000

(i) Calculate the Schedule Performance Index (SPI) and Cost Performance Index (CPI)

(ii) Interpret the results: Is the project ahead or behind schedule? Over budget or under budget?