



GOVERNMENT OF TAMILNADU
DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI

STATE PROJECT COORDINATION UNIT

(Established Under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	CONSTRUCTION MANAGEMENT
Course Code	CE / 2020 / 017
Course Duration	80 Hours
Minimum Eligibility Criteria and Pre requisites (if any)	10 th / +2 / Diploma / Graduates
Course Objectives	Training Module has been designed for the Participants to • Co-ordination between various construction agencies • Exercise control over the quality of material • Reduce time of construction • Achieve optimum utilization of man power • Achieve optimum utilization of machineries
Course Outcomes	At the end of the training, participants will be able to • Create written communication appropriate to the construction discipline. • Create a construction project safety plan • Create construction project cost estimates • Create construction project schedules
Expected Job Roles	• Construction manager

TEACHING AND SCHEME OF EXAMINATION

Course Code	Course Name	Hours		Assessment Marks		Duration of Examination
				Min	Max	
CE / 2020 / 017	CONSTRUCTION MANAGEMENT	Theory	80	50	100	3 Hours
		Practical	---	---	---	
		Total	80	50	100	

DETAILED SYLLABUS

UNIT NO.	MODULES	NO. OF THEORY HOURS
I	CONSTRUCTION MANAGEMENT	05
	Introduction to construction management– Need of construction management – Objectives of construction management - Functions of construction management	
II	CONSTRUCTION CONTRACTS	05
	Types of contract – Lump sum contract - Item rate contract - Cost plus percentage contract – Labor contract	
III	PROJECT PLANNING	10
	Objective of planning - Advantage of civil engineering project - Advantage of planning to client - Disadvantage of planning to engineer - Stages of planning by owner and contractor.	
IV	PROJECT SCHEDULING	17
	Scheduling – Definition - Preparation of schedule - Classification of schedule - Construction schedule – Material schedule - Labor schedule - Equipment schedule - Finance schedule - Time schedule – critical path method	
V	LEAN CONSTRUCTION AND LIFE CYCLE COST	10
	Life cycle cost - Eliminate waste- Defects- Over production- Not utilizing talent – Transport- High cost of insurance – Equipment breakdown- Document management – Lack of business plan	
VI	PROJECT CASH FLOW	18
	Time value of money - Interest rate of capital – PVC – NPV - Profitability index – Problem - Project funding - Global banking culture – Type of banks- Corporate bank	
VII	CONSTRUCTION SAFETY	15
	Designer – Employer – Workers- Approaches to safety - Safety in Construction	
TOTAL HOURS		80

S. No.	Sample Problems to Solve																																				
1.	The following all the three estimate of activity in minutes calculate the average expected time for each activity draw the project network identify the critical path. What is the duration of the project? <table><tr><th>Activity</th><th>1-2</th><th>1-3</th><th>1-5</th><th>2-4</th><th>3-4</th><th>4-5</th><th>4-6</th><th>5-6</th></tr><tr><td>T_o</td><td>2</td><td>4</td><td>2</td><td>1</td><td>5</td><td>3</td><td>2</td><td>1</td></tr><tr><td>T_m</td><td>3</td><td>5</td><td>2</td><td>2</td><td>6</td><td>4</td><td>3</td><td>2</td></tr><tr><td>T_P</td><td>5</td><td>5</td><td>4</td><td>4</td><td>8</td><td>9</td><td>6</td><td>5</td></tr></table>	Activity	1-2	1-3	1-5	2-4	3-4	4-5	4-6	5-6	T _o	2	4	2	1	5	3	2	1	T _m	3	5	2	2	6	4	3	2	T _P	5	5	4	4	8	9	6	5
Activity	1-2	1-3	1-5	2-4	3-4	4-5	4-6	5-6																													
T _o	2	4	2	1	5	3	2	1																													
T _m	3	5	2	2	6	4	3	2																													
T _P	5	5	4	4	8	9	6	5																													
2.	Draw the critical path and determine the project duration time for following details <table><tr><th>Activity</th><th>0-1</th><th>0-2</th><th>1-3</th><th>2-3</th><th>3-4</th><th>4-5</th><th>4-6</th><th>5-6</th></tr><tr><td>Duration in days</td><td>18</td><td>4</td><td>5</td><td>4</td><td>6</td><td>6</td><td>8</td><td>8</td></tr></table>	Activity	0-1	0-2	1-3	2-3	3-4	4-5	4-6	5-6	Duration in days	18	4	5	4	6	6	8	8																		
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Duration in days	18	4	5	4	6	6	8	8																													
3.	Calculate the net present value of machine from the following data and also profitability index. Total investment is Rs.25,000. Expected life of the machine is 5 years. Salvage value is Rs.2,500. PV factor for 5 years 0.621 @ 10%. <table><tr><th>year</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Cash in flownRs.</td><td>10,000</td><td>8,000</td><td>7,000</td><td>6,000</td><td>4,000</td></tr><tr><td>Pr Discount factor @ 10%</td><td>0.909</td><td>0.826</td><td>0.751</td><td>0.683</td><td>0.621</td></tr></table>	year	1	2	3	4	5	Cash in flownRs.	10,000	8,000	7,000	6,000	4,000	Pr Discount factor @ 10%	0.909	0.826	0.751	0.683	0.621																		
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4.	Explain about the role of employer in safety management																																				
5.	Explain about the approaches to move safety in construction																																				
6.	What are duties of a works in safety management																																				
7.	Mention any five benefits of safety management																																				

HARDWARE REQUIREMENT

SL. NO.	LIST OF TOOLS / EQUIPMENTS / MATERIALS
	NIL

SOFTWARE REQUIREMENT

SL. NO.	NAME OF THE SOFTWARE
	NIL

REFERENCE BOOKS

SL. NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	Construction Management	Daniel Halpern	Bolivar senior 4 th edition Willey Blake Wear Publishing Ltd.
2.	Construction Management	Francis fatwa	This Edition first published in 2013 by John Wiley and Sons Ltd.

ASSESSMENT AND CERTIFICATION

S.No	Criteria for Assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory conducted internally in the CIICP Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory.
3.	The assessment for theory part will be based on the marks scored in the end theory examination on the knowledge bank of questions.
4.	The passing criteria for successful completion of training is every trainee should score 50% of marks in the End Theory and Practical examination.
5.	On successful completion of training, Certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnics.

END EXAMINATION ALLOCATION OF MARKS

S. No.	Description	Maximum Marks
1.	THEORY EXAM PART – A (20 Qns x 2 Marks) : 40 PART – B (10 Qns x 3 Marks) : 30 PART – C (6 Qns x 5 Marks) : 30	100
TOTAL		100

THEORY MODEL QUESTION PAPER

CE / 2020 / 017 – CONSTRUCTION MANAGEMENT

(Maximum Marks: 100)

PART - A

Answer any **Twenty** Questions

20 x 2 = 40 Marks

- 1) Define construction management.
- 2) What is object of construction management?
- 3) What are the functions of construction management?
- 4) What is contract management?
- 5) Name any five types of contract?
- 6) What is Lump sum contract
- 7) What are the objectives of construction planning?
- 8) What are the classifications of scheduling?
- 9) Define designer.
- 10) Define construction schedule.
- 11) Define material schedule.
- 12) Define Life cycle cost.
- 13) Define High cost of insurance.
- 14) What is equipment break down?
- 15) What is interest rate of capital?
- 16) Define profitability index.
- 17) What is meant by construction team?
- 18) What is meant by labour contract?
- 19) What is meant by contract document?
- 20) What is meant by specification?
- 21) Define design factors.
- 22) Define technical sanction.
- 23) Define quality control.
- 24) What are the various factors on which the quality of a work depends?
- 25) Name the various causes of accident.

PART - B

Answer any **Ten** Questions

10 x 3 = 30 Marks

- 1) State the scope of construction management.
- 2) Write the various stages of construction of a project.
- 3) What are the objectives of construction management?
- 4) Explain the function of construction management.
- 5) What is bar chart?
- 6) What is network?
- 7) What is activity?
- 8) What is event?
- 9) What is float?
- 10) What are the limitation of project planning?

- 11) Write short notes on technical sanction.
- 12) Write short notes on general specifications.
- 13) What are the quality assurance techniques?
- 14) What is meant by work break down chart?
- 15) Write notes on critical path method.

PART - C

Answer any **Six** Questions

6 x 5 = 30 Marks

- 1) Explain the objectives of construction management
- 2) Explain the various stages planned by contractor
- 3) What are the particulars to be furnished in a contract document
- 4) What are the various time estimates in PERT and explain
- 5) Compare CPM and PERT
- 6) Explain about various causes of accidents
- 7) The following all the three estimate of activity in minutes calculate the average expected time for each activity draw the project network identify the critical path. What is the duration of the project.

Activity	1-2	1-6	2-3	2-4	3-5	4-5	6-7	5-8
To	3	2	6	2	5	3	3	1
Tm	6	5	12	5	11	6	9	4
Tp	15	14	30	8	17	15	27	7

- 8) Draw the critical path and determine the project duration time for following details.

Activity	1-2	1-3	2-4	2-5	4-7	5-7	3-6	6-8
Duration in days	5	10	1	6	12	3	7	6

- 9) Draw the critical path and determine the project duration time for following details.

Activity	1-2	1-3	2-4	2-5	4-7	5-7	7-8	3-6	6-8
Duration in days	10	15	5	7	12	4	8	6	2

- 10) A firm with a 10% cost of capital is considering investing in a new machine with an expected life of six years. The cash flows resulting from this investment are as follows. Initial investment- 1, 00,000. Determine the probability index and state whether the project can be undertaken or rejected.

YEAR	1	2	3	4	5	6
CASH IN FLOWs.	35,000	18,000	18,000	24,000	26,000	30,000
