Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

I SEMESTER M.TECH. (CE&M) END SEMESTER EXAMINATION

February 2021

SUBJECT: CONSTRUCTION ENGG PROJECT AND SAFETY MANAGEMENT

[CIE 5157]

Date of Exam: **22/02/2021** Time of Exam: **2pm to 5pm** Max. Marks: **50**

Instructions to Candidates:

- Answer ALL the questions & missing data may be suitably assumed

1A. Explain the various Characteristics of Project **(03)** **CO1**

1B. Draw a neat Network diagram for the following activities shown in the table below with their inter-relationship and number the events. **(07)** **CO2**

Actvity	Predecessor Activity	Actvity	Predecessor Activity
A	-	I	A,G
B	A	J	H,I
C	B,,F	K	C,D,J
D	B,E,F	L	H,I
E	A,G	M	H,I
F	A,G	N	C,D,J
G	-	O	C,D,J
H	-	P	K,L,M

2A. Determine Total Float from the given table. If the duration of Activity E is increased by 3 days. How does it affect the total duration of the project **(04)** **CO2**

Actvity	Predecessor Activity	Duration	Actvity	Predecessor Activity	Duration
A	-	5	E	A,B,C	9
B	A	4	F	A,B,C	8
C	-	3	G	D,E	7
D	B	2	H	D,E	6

2B. Determine Direct Cost and duration at the end of 3rd stage of crashing **(06)** **CO3**

Activity	Normal Time (Weeks)	Crash Time (Weeks)	Normal Cost (Rs)	Crash Cost (Rs)
1-2	4	2	1,000	2,000
2-3	4	2	3,500	4,000
2-4	3	1	3,000	4,500
2-5	5	3	2,000	6,000
3-5	3	2	1,300	2,000
4-5	6	3	2,200	2,500
5-6	7	4	3,000	3,600

<table>
<tr><td>3A.</td><td>Sketch a graph of Direct Cost, Indirect Cost and Total Cost V/S duration and indicate optimum duration and minimum cost</td><td>(01)</td><td>CO3</td></tr>
<tr><td>3B.</td><td>Explain in detail “CPM updating”.</td><td>(04)</td><td>CO4</td></tr>
<tr><td>3C.</td><td>i) Table below shows activities, duration and labour requirement. Allocate the resource requirement.
<table>
<tr><th>Activity</th><th>Duration</th><th>Labour Requirement</th><th>Activity</th><th>Duration</th><th>Labour Requirement</th></tr>
<tr><td>1-2</td><td>2</td><td>4</td><td>3-6</td><td>5</td><td>8</td></tr>
<tr><td>1-3</td><td>3</td><td>7</td><td>4-6</td><td>4</td><td>5</td></tr>
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<tr><td>3-5</td><td>6</td><td>2</td><td>6-7</td><td>2</td><td>4</td></tr>
</table></td><td>(05)</td><td>CO4</td></tr>
<tr><td>4A.</td><td>Explain the following: i) Resource Smoothing ii) Resource Levelling iii) Histogram.</td><td>(05)</td><td>CO4</td></tr>
<tr><td>4B.</td><td>Explain the following for the current situation of safety in construction
i) Organizational aspect
ii) Behavioural Aspect.</td><td>(05)</td><td>CO5</td></tr>
<tr><td>5A.</td><td>Explain the various Fire-fighting extiquishers used</td><td>(05)</td><td>CO5</td></tr>
<tr><td>5B.</td><td>Human factors plays a vital role in Safety Management. Justify.</td><td>(05)</td><td>CO5</td></tr>
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