Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, December 2020

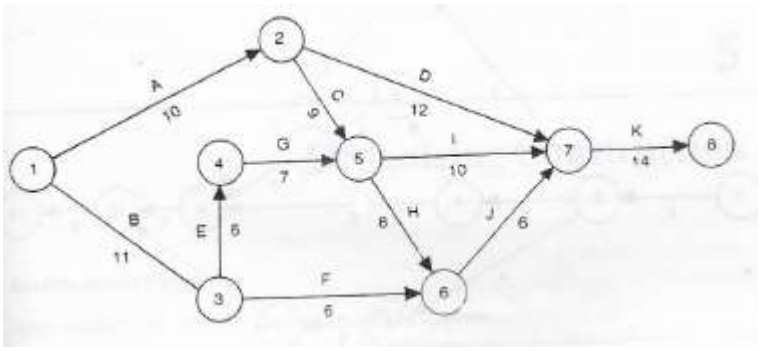
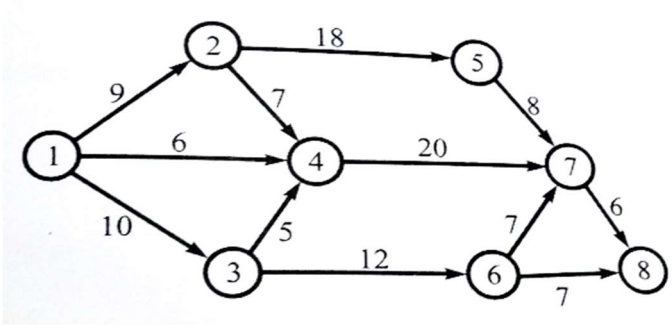
Course: Construction Engineering and Management — **Semester: V**
Program: B.Tech Civil Engg — **Time 03 hrs.**
Course Code: CIVL 3021 — **Max. Marks: 100**

Instructions:

SECTION A (30 Marks)

S. No.		Marks	CO
Q 1	A. CPM stands for a. Critical Project Management b. Critical Path Management c. Critical Path Method d. Critical Program Method B. In CPM network Critical Path is defined as a. Longest path with minimum slack b. Longest path with zero float c. Path with zero float only d. Path with minimum float C. On A-O-A network a. Activity shown on node & arrow give direction b. Activity shown by arrow & event by node c. Activity shown on node & event also on node d. Activity shown over Arrow & Event shown below arrow D. Fulkerson's rule is used for a. Drawing network with A-O-N method b. Calculating project time of a network c. Numbering the events in a network d. Calculating critical path in a network E. Resource Levelling means a. Allocating the Resources to the project b. Calculating project time of a network c. Numbering the events in a network d. Calculating critical path in a network	**5**	**CO2**
Q 2	A. BOT contract called as Build,_____ & _____ contract. B. Full form of PPP contract is _____ _____ _____ Contract.	**5**	**CO1**
Q 3	Define characteristics of "Functional organisation".	**5**	**CO1**

<table>
<tr><td>Q 4</td><td>Define two approaches of resource allocation for their optimum utilization in Project.</td><td>5</td><td>CO3</td></tr>
<tr><td>Q 5</td><td>Define in 1-2 lines the following:
A. Dummy Activity
B. Float
C. Slack</td><td>5</td><td>CO2</td></tr>
<tr><td>Q 6</td><td>Define terms Direct Cost & Indirect cost for a project.</td><td>5</td><td>CO4</td></tr>
<tr><td colspan="4">SECTION B (50 Marks)</td></tr>
<tr><td>Q 7</td><td>In construction industry, list down various types of contract generally used? Explain characteristic, advantage & disadvantage of for Lump Sum contract.</td><td>10</td><td>CO1</td></tr>
<tr><td>Q 8</td><td>Draw the network diagram and find out critical Path and the completion time of the project
<table>
<tr><th>Activity</th><th>Duration</th><th>Preceding Activity (in Days)</th></tr>
<tr><td>A-B</td><td>7</td><td>-</td></tr>
<tr><td>B-C</td><td>10</td><td>A-B</td></tr>
<tr><td>B-D</td><td>15</td><td>A-B</td></tr>
<tr><td>C-D</td><td>7</td><td>B-C</td></tr>
<tr><td>C-E</td><td>12</td><td>B-C</td></tr>
<tr><td>D-E</td><td>3</td><td>B-D, C-D</td></tr>
<tr><td>E-F</td><td>5</td><td>C-E, D-E</td></tr>
</table>
How many paths are there from start to finish and what is the total duration for each of them?</td><td>10</td><td>CO2</td></tr>
<tr><td>Q 9</td><td>Discuss the Quality Management System and steps involved for defining it? Explain the process for Quality control.
OR
What is difference in Issue & Risk? Define risk management. Show the risk management process by showing each step with its purpose & tools used.</td><td>10</td><td>CO4</td></tr>
<tr><td>Q 10</td><td>A project consists of three activities as detailed below. Determine optimum project completion time assuming indirect costs @ Rs. 1000/- per day
<table>
<tr><th rowspan="2">Activity</th><th colspan="2">Normal</th><th colspan="2">Crash</th></tr>
<tr><th>Time (days)</th><th>Cost (Rs.)</th><th>Time (Days)</th><th>Cost (Rs.)</th></tr>
<tr><td>1-2</td><td>5</td><td>4000</td><td>4</td><td>5000</td></tr>
<tr><td>1-3</td><td>7</td><td>8000</td><td>3</td><td>10000</td></tr>
<tr><td>2-3</td><td>6</td><td>6000</td><td>2</td><td>8400</td></tr>
</table>
Draw the time-cost diagram also.</td><td>10</td><td>CO4</td></tr>
</table>

Q 11	Analyze the project shown below  Find (1) critical Path (2) the completion time of Project (3) Total Float of activities	**10**	**CO3**
	SECTION-C (20 Marks)		
Q 12	For the below mentioned network assume that, after working 15 days on the project, the following conditions exist: a. Activities 1-2, 1-3, & 1-4 are completed as originally planned b. Activity 2-4 is in process & will be completed in 3 more days c. Activity 3-6 is in process and will need 18 more days for completion d. Activity 6-7 appears to present some problem & its new estimated time of completion is 12 days e. Activity 6-8 can be completed in 5 days instead of originally planned 7 days  Formulate a new project based on the assessment at the end of 15 days. Including all activities in the new project. **OR** A construction Project consists of 12 activities. The predecessor relationships and duration mentioned below	**20**	**CO3**

Activity	A	B	C	D	E	F	G	H	I	J	K	L
Predecessors	-	A	A	A	C	C	B,E	F	F	D, I	G,H	K, J
Durations (days)	3	5	4	6	3	4	5	5	3	4	2	3

Draw a Network for the construction project and identify following

(i) Activity time, (ii) All floats for each activity (iii) Critical Path for the network