UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: B.Tech Civil Engg   **Semester: V**
Programme: Construction Planning & Management (CEEG 316)
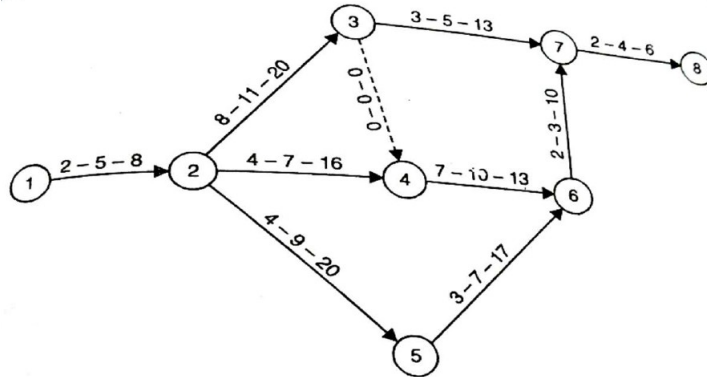**Time: 03 hrs.**   **Max. Marks: 100**
Instructions:

SECTION A

S. No.		Marks	CO
Q 1	What is project planning? Write short note on Pre tender planning & Post tender planning	4	CO1
Q 2	What is organization? Define characteristics of "Functional organisation". What are its advantage & disadvantage?	4	CO1
Q 3	Write short note on Project Quality Management.	4	CO4
Q 4	What do you understand by updating? Why it is essential?	4	CO5
Q 5	A construction Project consists of 12 activities. The predecessor relationships are identified by their node numbers as indicated below: Draw Network Diagram	4	CO2

Activity	A	B	C	D	E	F	G	H	I	J	K	L
Identification	(1,2)	(2,4)	(2,3)	(2,7)	(3,4)	(3,5)	(4,6)	(5,6)	(5,7)	(7,8)	(6,8)	(8,9)

SECTION B

Q 6	a. Briefly describe the difference in CPM & PERT b. What is slack? what do you understand by negative slack.	5 5	CO2
Q 7	What is Project Risk management & what are steps involved? Explain the process of first step of Risk Management.	10	CO4
Q 8	What is contract? Briefly describe various type of contract in construction industry.	10	CO1

Q 9	For a construction project, the network shown below with three times estimates of each activity.	10	CO3

Determine (i) the expected or average time t_E and the variance for each activity, (ii) the earliest expected time, and (iii) the latest allowable time for each event. Make the entries in a tabular form.

OR

A construction project consist of following activities. The inter dependencies mentioned below:

Activity		A	B	C	D	E	F	G	H	I
Duration (weeks)		4	4	6	3	5	6	5	7	4
Activities Immediately	Preceding	-	A	A	B	C, D	B	C, D	E	E, F, G
	Following	B, C	D, F	E, G	E, G	H,I	I	I	-	-

Draw Network & find following:
   a.   Prepare CPM schedule & find critical path
   b.   Total float & Free float

		10	CO3

SECTION-C

Q 10	A project consists of five activities as detailed below. Determine optimum project completion time assuming indirect costs @ Rs. 450/- per week	20	CO4

Activity	Normal Time T_N (weeks)	Crash Time T_C (weeks)	Normal Cost C_N (Rs.)	Crash Cost C_C (Rs.)
(1-2)	5	4	600	800
(1-3)	3	1	400	600
(1-4)	8	5	900	1200
(2-4)	4	2	600	1200
(3-4)	4	3	500	700

|	Sketch the time-cost diagram also.		

Q 11	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
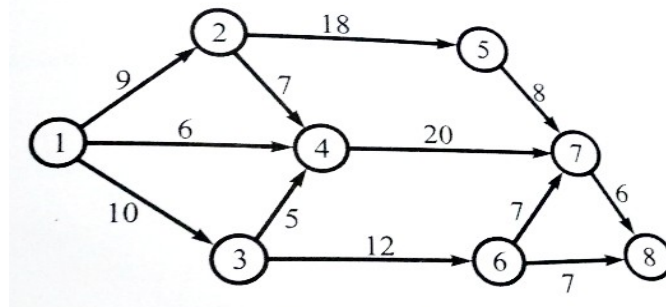	
	  i. Formulate a new project based on the assessment at the end of 15 days. Including all activities in the new project
	  ii. Draw bar chart for the original project and show on it the progress as on 15th day. Indicate also the modification based on the re-assessment.
	
	OR
		20	CO3

	A Project consists of 7 activities, whose time estimate and manpower requirement are indicated below: | Activity	(1-2)	(1-3)	(2-3)	(2-4)	(3-5)	(4-5)	(5-6) | |---|---|---|---|---|---|---|---|
Time (days)	2	4	8	5	7	2	2
Manpower (Masons)	2	0	6	3	2	1	3 | Do resource smoothing & show the same by drawing Histogram for masons.	20	CO3

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: B.Tech Civil Engg   **Semester: V**

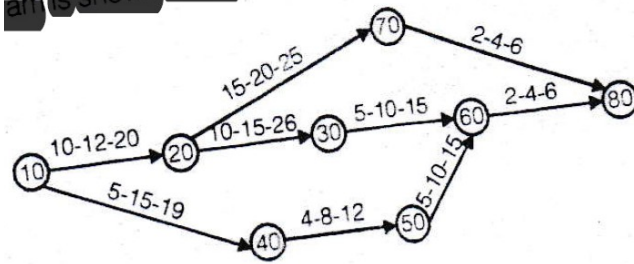**Programme:** Construction Planning & Management (CEEG 316)

Time: 03 hrs.   **Max. Marks: 100**

Instructions:

SECTION A

S. No.		Marks	CO
Q 1	What is project management? Briefly describe Project Planning & Project control.	**4**	**CO1**
Q 2	What are various type of Contract in construction industry? Explain for BOT & Lump Sum contract.	**4**	**CO1**
Q 3	What is Risk Management for project? Draw flow chart of risk management process, showing each step with its purpose & tools used.	**4**	**CO4**
Q 4	What do you understand by resource Smoothing & Resource Levelling?	**4**	**CO5**
Q 5	A construction Project has 14 activities A to M. The relationships among these activities are as below: <table><tr><td>(1) A is the first activity</td><td>(2) B & C can be performed in parallel and are immediate successor to A</td></tr><tr><td>(3) D, E and F follow B</td><td>(4) G follows E</td></tr><tr><td>(5) H follows D, but it cannot start until E is complete</td><td>(6) I and J succeed G</td></tr><tr><td>(7) F and J precede K</td><td>(8) H and I precede L</td></tr><tr><td>(9) M succeeds L& K</td><td>(10) The last operation N succeeds M and C</td></tr></table> Draw Network Diagram	**4**	**CO2**

SECTION B

Q 6	a. What is difference in Float & Slack? b. What is different in Total float & Free Float?	**5** **5**	**CO2**
Q 7	What is Project Quality management & what are steps involved? Explain the process for Quality control.	**10**	**CO4**
Q 8	What is Organisation? Elaborate the different types of organization & their features.	**10**	**CO1**
Q 9	For a construction project, the network shown below with three times estimates of each activity.	**10**	**CO3**

Determine (i) the expected or average time t_E and the variance for each activity, (ii) the earliest expected time, and (iii) the latest allowable time for each event. Make the entries in a tabular form.

OR

The network of a construction project & its node presentation has been defined in the below table with estimated durations of various activities.

Activity	A	B	C	D	E	F	G	H	I
Node	(1-2)	(1-3)	(1-4)	(3-4)	(2-6)	(3-6)	(3-5)	(4-5)	(5-6)
Duration	3	4	14	3	5	6	4	1	1

Determine the following

(i) Activity time, (ii) Total float & free float for each activity (iii) Critical Path for the network

	10	**CO3**

SECTION-C

Q 10 A project consists of four activities as detailed below. Determine optimum project completion time assuming indirect costs @ Rs. 2000/- per week

Activity	Normal Time T_N (weeks)	Crash Time T_C (weeks)	Normal Cost C_N (Rs.)	Crash Cost C_C (Rs.)
(1-2)	4	2	4000	12000
(2-3)	5	2	3000	7500
(2-4)	7	5	3600	6000
(3-4)	4	2	5000	10000

Draw the time-cost diagram also.

|	
20	**CO4**

Q 11 For the below mentioned network assume that, after working 10 days on the project, the following conditions exist:

a. Activities 1-2, 1-3, & 1-4 are completed as originally planned
b. Activity 4-5 is in process & will be require 6 more days for its completion
c. Activity 4-6 is in process and will require 6 more days for its completion
d. Activity 3-6 is in progress and will be completed in one day.
e. Other activities have not been commenced and their original predicted

20	**CO3**

durations will hold good, except for activity 5-7 which will require only 3 days instead of 5 days originally planned.
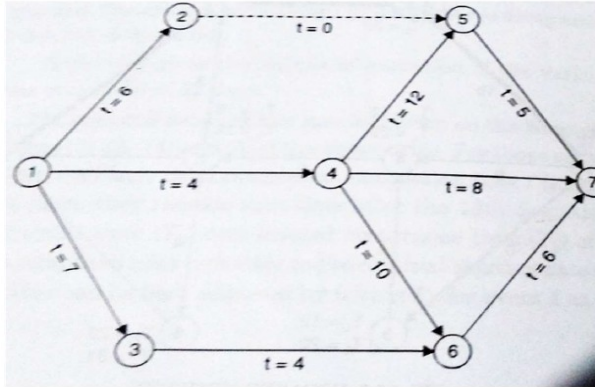
i.   Update the network & determine the critical path for updated network. What is the total increase in the project duration?
ii. Draw bar chart for the original project and show on it the progress as on 10th day. Indicate also the modification based on the re-assessment

OR

In a construction project, there are 7 activities, whose time estimate and manpower requirement are indicated below:

Activity	(1-2)	(1-3)	(2-3)	(2-4)	(3-5)	(4-5)	(5-6)
Time (days)	2	4	8	5	7	2	2
Manpower (Carpenter)	3	0	7	4	3	2	4

Do resource smoothing & show the same by drawing Histogram for carpenter.