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## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

**Program:** B.Tech Civil Engg  
**Subject (Course):** Construction project Management  
**Course Code** : CE 472  
**No. of page/s:** 04

**Semester –** VII  
**Max. Marks** : 100  
**Duration** : 3 Hrs

### Section A ( Attempt All Questions)

1. What is contract? What are different type of contract? Define them in brief. [2]
2. Define Slack & Float and how these two are different. [2]
3. Explain why planning is necessary. Describe various steps for planning. [2]
4. Define characteristics of “Functional Organization”. What are its advantage & disadvantage? [2]
5. Define project risk? How you differentiate risk from issue. Quote example for risk & issue in construction project. [2]
6. A construction Project consists of 12 activities. The predecessor relationships are identified by their node numbers as indicated below:

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

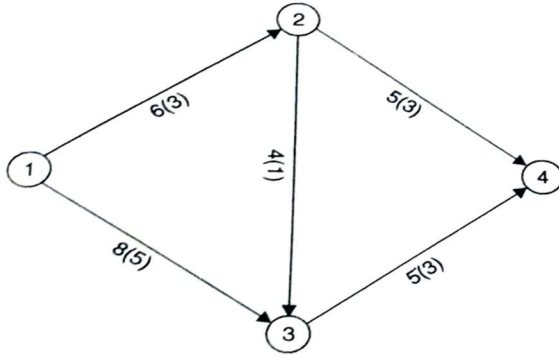
[5]

Draw Network diagram.

7. Who are the agencies supporting in construction project. Define their roles [5]

### SECTION B (Attempt All Questions)

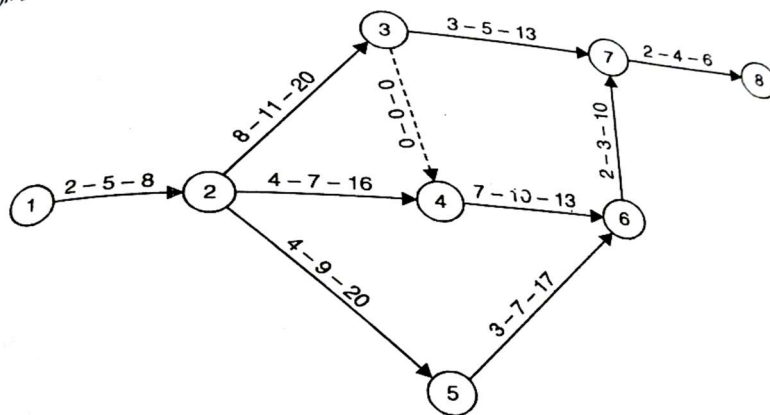
8. For the below mentioned project network, determine the optimum duration & the corresponding minimum cost. [10]



Activity	Normal Duration (weeks)	Normal Cost (Rs.)	Crash Duration (weeks)	Crash Cost (Rs.)
1-2	6	7000	3	14500
1-3	8	4000	5	8500
2-3	4	6000	1	9000
2-4	5	8000	3	15000
3-4	5	5000	3	11000

The direct cost for the project is Rs. 3000/- per week. Draw the time scaled version of the network at each stage of crashing.

9. What is project planning? Write short note on pre-tender planning & pre-construction planning. [10]
10. For a construction project, the network shown below with three times estimates of each activity. [10]



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.

11. Define Project Quality Management System. Explain process of Quality Management system in detail. [10]

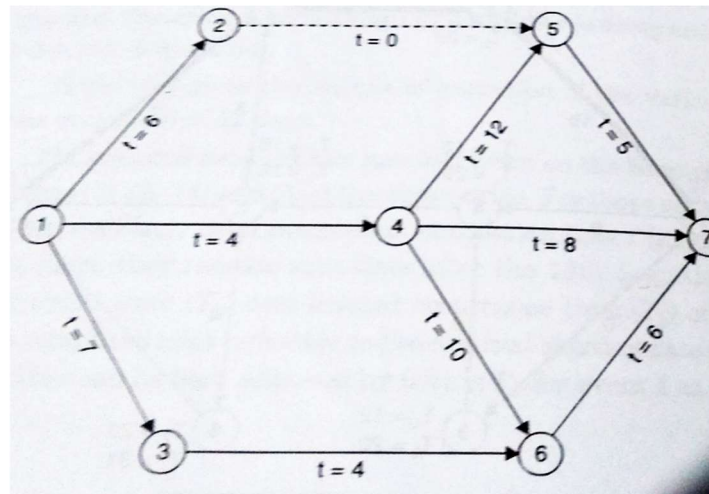
**SECTION C (Attempt any two Question)**

12. a.) Briefly describe the resource allocation issue in networking. What are the methods of solving the problem? [10]

b.) What you understand by Resource Smoothing & resource levelling? [10]

13. A network for project shown below. The network to be updated after 10 days of its execution. The following conditions exist at the end of 10 days:

- a. Activity 1-2, 1-3 & 1-4 have been completed as originally scheduled.
- b. Activity 4-5 is in progress & will require 6 more days for its completion.
- c. Activity 4-6 is in progress & will require 6 more days for its completion.
- d. Activity 3-6 is in progress & will be completed in one day
- e. Other activities have not been commenced & their original predicted duration will hold good, except for activity 5-7 which will require only 3 days instead of five days originally planned.



[20]

- 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

14. a.) A construction Project consists of 5 Events. The predecessor are identified as below:

[6]

Event	1	2	3	4	5	6	7	8
Preceded by event	Initial event	1	2	2 & 3	4	5 & 7	3 & 4	6 & 7

Draw Arrow Diagram for project.

b.) For the above network the expected times are as below:

Activity	1-2	2-3	2-4	3-4	3-7	4-5	4-7	5-6	6-8	7-6	7-8
Duration (Days)	5	8	9	3	12	4	12	8	10	2	5

[14]

If the schedule completion date is equal to the earliest expected time  $T_E$  for the end event, calculate the slack time for each event and identify the critical path. Present computation in tabular form.