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**UNIVERSITY OF PETROLEUM & ENERGY STUDIES  
DEHRADUN**

**End Semester Examination – December 2017**

**Program/Course: B. Tech. (ELECTRICAL) Semester : VII**  
**Subject: Project Management & Contract Administration Max. Marks : 100**  
**Code : MBCQ-724 Duration : 3 Hrs.**  
**No. of page/s: 02**

**Note: Use of Calculators allowed**

**SECTION – A: Answer any six questions. Each carries 10 marks. (60 marks)**

- Describe the non-financial factors covered in business case analysis of a project.
- Who are project Stakeholders? How we can identify and classify them?
- What is a contract? What are the contents of a contract?
- Explain Cost Breakdown Structure and give an overview of various tools & techniques used for project cost estimation.
- What is a risk register? Give an account of various risk response strategies.
- Estimate the installation cost of a plant to be constructed now of annual capacity 400 tons per annum at new location (location index = 150); given that the installation cost of an existing plant at a location (with location index = 250) of annual capacity 200 tons per annum was Rs. 500 million, which was constructed in 2010. [Cost index (2017) = 3500, Cost index (2010) = 2000]. Using
  - Investment per Annual ton Capacity Method
  - Six-tenth Factor Method
- A project consists of seven activities whose details are given in the following table:

Activity	A	B	C	D	E	F	G
Predecessor Activity	-	-	A	B	D	D	E
Optimistic Time Estimate (a)	2	3	3	1	3	4	5
Most Likely Time Estimate (m)	3	3	5	4	6	7	6
Pessimistic Time Estimate (b)	4	3	7	7	9	10	7

Find the expected completion time of the project.

**SECTION –B: Answer any two of the following questions. Each carries 20 marks. (40 Marks)**

8. Discuss ten knowledge management areas required in project management. Also, explain different process groups of project management with flow chart.

9. Consider the data of a project shown in the following table.

Activity	Immediate predecessor(s)	Time (weeks)		Cost (Rs.)	
		Normal	Crash	Normal	Crash
A	-	8	6	4000	4300
B	-	5	4	3000	3150
C	-	10	8	6000	6800
D	A	6	5	4000	4200
E	C	7	7	5000	-
F	D	9	7	7000	7550
G	B,E	3	2	2000	2100

If the indirect cost per week is Rs. 350, find the optimal crashed result of the project network.

10. The following table gives the data of a project.

Activity	Immediate Predecessors	Duration	Budgeted Cost of Activity (Rs. Lakhs)
A	-	8	8
B	-	2	8
C	B	5	10
D	C	6	9
E	A	4	12
F	D,E	4	6
G	D,E	1	1
H	F	3	6

- a) Draw the Gantt chart for the project and prepare cost baseline.  
 b) The status of the project at the end of the 15<sup>th</sup> week is as follows:

Activity	% Work Completed	Actual cost
A	100	10
B	100	10
C	100	12
D	100	11
E	100	15
Others	0	0

Calculate Planned Value, Earned Value, Actual Cost, Cost Variance, Schedule Variance, Cost Performance Index, Schedule Performance Index, Expected project completion cost, Expected project completion time.