Name:

Enrolment No:

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

Course: Project Management & Contract Administration **(ELEG 416)** **Semester:** VII

Programme: B. Tech. (PSE) + B. Tech. (ELE)

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

Instructions: Use of calculator and graph papers is allowed.

SECTION A: Write short notes on the following. Each carries 4 marks. (5*4=20 Mks.)

S. No.	Brief the terms given below:	Marks	CO
1.1	Project Definition & Examples	**4**	**CO 1**
1.2	Project Life Cycle	**4**	**CO 2**
1.3	CPM vs. PERT	**4**	**CO 3**
1.4	Project Audit	**4**	**CO 4**
1.5	Contract	**4**	**CO 5**

SECTION B: Answer the following questions. Each carries 10 marks. (4*10=40 Marks)

2.1	What are the non-financial aspects of business case analysis in project selection? **OR** Discuss the commonly used techniques for financial appraisal of projects.	**10**	**CO 1**
2.2	Estimate the installation cost of a plant to be constructed now of annual capacity 4,000 tones at new location (location index = 110); given that the installation cost of an existing plant at a location (with location index = 140) of annual capacity 2,000 tones was Rs. 25 Crores, which was constructed in 2010. [Cost index (2018) = 1600, Cost index (2010) = 1000]. Using (a) Investment per Annual tonne Capacity Method (b) Six-tenth Factor Method	**10**	**CO 2**
2.3	How project stakeholders can be identified? What steps should be taken for managing project stakeholders.	**10**	**CO 2**
2.4	What are the various types of contracts? Differentiate them.	**10**	**CO 5**

SECTION-C

3.1	A project consists of 12 activities whose precedence relationships and their time estimates are shown as follows:	**20**	**CO 3**

Activity	Immediate predecessor(s)	Time Estimates		
		Optimistic (a)	Most Likely (m)	Pessimistic (b)
A	-	4	6	8
B	-	2	3	4
C	-	5	5	5
D	A	8	10	12
E	A	4	5	6
F	B,E	5	6	7
G	C	5	8	11
H	C	6	8	10
I	D	7	7	13
J	F,G	8	10	12
K	H	2	3	4
L	K	4	5	6

a) Find the expected time duration and variance of each activity.
b) Draw the project network
c) Find the critical path and corresponding expected project completion time.
d) What is the probability that the project will be completed in 26 weeks?

OR

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.

3.2	The data on a project is presented in the following table:	**20**	**CO 4**

Activity	Description	Immediate Predecessors	Duration (Weeks)	Total Cost Rs. '000
H	Basic design	-	10	100
I	Hardware design for A	H	8	64
J	Hardware design for B	H	6	96
K	Drawings for B	J	4	16
L	Software specifications	J	2	36
M	Parts purchase for B	J	4	84
N	Parts purchase for A	I	4	80
O	Drawings for A	I	5	50
P	Installation drawings	I,J	5	60
Q	Software purchases	L	5	80
R	Delivery of parts for B	M	5	0
S	Delivery of parts for A	N	3	0
T	Software delivery	Q	3	0
U	Assembly of A	O,S	1	14
V	Assembly of B	K,R	5	80
W	Test A	U	2	24
X	Test B	V	3	36
Y	Final Installation	P,W,X	8	104
Z	Final system test	Y,T	6	66

a) Draw the cost baseline
b) The status of the project at the end of the 20th week is as follows:
AC = 530,000; EV = 429,000
Calculate the SV and CV of the project
c) What is the expected cost of completion and duration of the project based on current performance
d) What is the expected cost of the project and duration if the efficiency becomes 100% for the remaining period of the project