Name:

Enrolment No:

UPES
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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Dec 2022

Course: Software Engineering and Project Management **Semester: 4th**
Program: B.tech CSE IBM and XEBIA(All branches) **Time 03 hrs.**
Course Code: CSEG2008 **Max. Marks: 100**

SECTION A

Q1	Explain the two categories of prototypes in software models?	**4**	**CO1**
Q 2	Differentiate between alpha testing, beta testing, validation testing, verification testing?	**4**	**CO5**
Q3	What is the role of project manager in software development process?	**4**	**CO4**
Q4	What is requirement engineering ?Name its phases along with diagrammatic representation	**4**	**CO2**
Q5	Describe various classes of risk under risk identification?	**4**	**CO3**

SECTION B

Q 6	Elaborate the model, which takes into consideration the risk factor during development process?	**10**	**CO1**
Q7	What are the components of use case? Draw a use case diagram for bus ticket reservation system?	**5+5**	**CO2**
Q8	Discuss various modes of development under COCOMO? Assume that the size of an organic type software product has been estimated to be 32,000 lines of source code. Assume that the average salary of software engineers be Rs. 15,000/- per month. Determine the effort required to develop the software product and the nominal development time.	**5+5**	**CO4**
Q9	• The table below gives the estimated cash flow for three different projects: • Calculate Net Profit for each project. Based on your answer select which project you would choose to develop. • Using shortest payback method identify which project you would select for development. Justify your answer referring to the projects payback period and possible profits in payback year. • Calculate ROI of each project given in the table and select the project based on your ROI calculation. • Calculate NPV using 10% discount rate.	**10(1+2+ 2+5)**	**CO4**

Year	Project-1	Project-2	Project-3
0	-195000	-160000	-295000

1	15000	15000	30000
2	30000	15000	35000
3	55000	20000	50000
4	50000	35000	120000
5	55000	55000	110000
6	50000	90000	115000

OR

Consider a project with the following parameters.

(i) External Inputs:

(a) 10 with low complexity (b)15 with average complexity

(c) 17 with high complexity

(ii) External Outputs:

(a) 6 with low complexity (b)13 with high complexity

(iii) External Inquiries:

(a) 3 with low complexity

(b) 4 with average complexity

(c) 2 high complexity

(iv) Internal logical files:

- (a) 2 with average complexity (b)1 with high complexity

(v) External Interface files:

- (a) 9 with low complexity
- In addition to above, system requires

i. Significant data communication

ii. Performance is very critical

iii. Designed code may be moderately reusable

iv. Systemis not designed for multiple installation in different organizations.

10(5+5)

	• Other complexity adjustment factors are treated as average. Compute the function points for the project.		
	SECTION-C		

Q 10	a) Draw control flow graph for the program hence compute Cyclomatic complexity using any two methods, and draw the Graph matrix for the same.
	int compute_gcd (int x, int y) {
	1 while (x ! = y) {
	2 if (x>y) then
	3 x = x-y;
	4 else y = y-x;
	5 }
	6 return x; }
	
	b) Describe the information flow model? And
	Arrange the following with the worst and best cases
	1) COHESION
	• Procedural cohesion
	• Logical cohesion
	• Coincident cohesion
	• Sequential cohesion
	• Temporal cohesion
	• Functional cohesion
	
	2) COUPLING
	• External
	• Common
	• Content
	• Stamp
	• Data
	• Control
		10+10	**CO5, CO2**

Q11	a) Consider a program for the determination of the largest amongst three numbers. Its input is a triple of positive integers (say x,y,z) and values are from interval [1, 300]. Design the boundary value cases for this problem. b) How can we deal with the risk in a project?Explain? **OR** a) A program determines the previous date. Its input is triple of day, month and year with values in the range 1≤ month ≤ 12 ; 1 ≤ day ≤ 31 and 1900 ≤ year ≤ 2025. The possible outputs would be the Previous date or invalid input date. Perform the Boundary Value Analysis for this problem.	**10+10**	**CO3, CO5**

	b) "A project goes through a process before it is delivered to the client as a product". Comment on the life cycle of project and identify the common deliverables"		