B. Tech.
(SEM VI) THEORY EXAMINATION 2022-23
SOFTWARE PROJECT MANAGEMENT

Time: 3 Hours   Total Marks: 100

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   Attempt all questions in brief.   2 x 10 = 20

a.   Explain how a B. Tech program is a project.
b.   Discuss Technical Risk in software project management.
c.   Discuss Function Point and compare it with Lines of Code.
d.   List out different types of cost estimation technique.
e.   Explain why Risk Planning is required.
f.   Discuss the structure of activity node in activity network.
g.   Discuss advantages of software configuration management.
h.   Explain effect on Project if CPI>1.1 and SPI>1.2.
i.   Explain the best method of staff selection.
j.   Discuss role of leadership in project management.

SECTION B

2.   Attempt any three of the following: 10x3=30

a.   Discuss project portfolio management with examples.
b.   Outline COSMIC full function points for software cost estimation.
c.   Illustrate Work Breakdown Structure (WBS) in context to software project and product.
d.   Discuss Framework for management & control in context of cost and schedule.
e.   Discuss The Oldham –Hackman job characteristic model.

SECTION C

3.   Attempt any one part of the following: 10x1=10

a   (i)Discuss characteristics of an objective of a project.
      (ii)Explain management principles for controlling and monitoring a project.

b.   The status of cash flow for four projects is given in the following table. (Negative figures at the end of year 0 represent initial investment).

Cash flow for four projects (Figures are end of year total in rupees)				
Year	Project 1	Project 2	Project 3	Project 4
0	-100,000	-1,000,000	-100,000	-120,000
1	10,000	200,000	30,000	30,000
2	10,000	200,000	30,000	30,000
3	10,000	200,000	30,000	30,000
4	20,000	200,000	30,000	30,000

| 5 | 100,000 | 300,000 | 30,000 | 75,000 |

Calculate Net Profit (NP). Payback Period (PP). Return on Investment (ROI) and Net Present Value (NPV) on the basis of above table. You may assume discount rate to be as 10%.

4. **Attempt any *one* part of the following:** 10x1=10

a. Discuss Rapid Application Model for software development.

b. Discuss Agile methodologies for software development

5. **Attempt any *one* part of the following:** 10x1=10

a. Formulate following Using CPM (i) Construct the project network. (ii)Perform Project Time estimation using forward and backward pass (iii) Identify the critical path. The table contains the activity label, respective duration (in weeks) and its precedents.

Activity	Duration (in weeks)	Precedents
A	6	-
B	4	-
C	3	A
D	4	B
E	3	B
F	10	-
G	3	E, F
H	2	C, D

b. Design an activity network diagram by taking a suitable example using PERT Technique. Find project schedule time and Critical path.

6. **Attempt any *one* part of the following:** 10x1=10

a. Discuss Earned Value Analysis & Compute Estimate At Completion (EAC) and Variance At Completion (VAC) if both SPI and CPI influence the project work when given variables are
   - Budget At Completion (BAC) = $22,000
   - Earned Value (EV) = $13,000
   - Planned Value (PV) = $14,000
   - Actual Cost (AC) = $15,000

b. You are managing a project which is six months of its execution. You are now reviewing the project status and you have ascertained that the project is behind schedule. The actual cost of Activity A is ₹ 2,00,000 and that of Activity B is ₹ 1,00,000. The planned value of these activities is ₹ 1,80,000 and ₹ 80,000 respectively. Activity A is 100% complete. However, Activity B is only 75% complete. Calculate the schedule performance index and cost performance index of the project on the review date.

7. **Attempt any *one* part of the following:** 10x1=10

a. Discuss the factors that influence staffing decisions in SPM and evaluate the impact of poor staffing decisions in project outcomes.

b. Explain Professional and ethical concerns in Software project management.