B5.1-R4: SOFTWARE PROJECT MANAGEMENT

NOTE:

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.

a) At which point in the SDLC, does the project management activity start? When do they end? List the important activities a software project manager performs during Project Management.

b) What is Project? What are the specifications and parameters required to define a project?

c) What is the objective of the Project Planning Process? List various activities a software project manger performs in planning.

d) What is Software Engineering? Explain features of a good software.

e) Explain the terms: Risk Identification and Risk Assessment

f) What is the significance of Software Metrics in Software Project Management? Explain Process and Project metrics, with example.

g) List the important items that a Software Project Management Plan (SPMP) document should discuss.

(7x4)

2.

a) What is LOC? Explain disadvantage of this method as a measure of size of a software. Compare Halstead's length and volume measures of size with LOC measure by giving suitable example.

b) Define the term project objective with a suitable example. What are factors that constrain the achievement of project objectives?

c) Explain phases of project life cycle with graph of effort Vs time required for each phase.

(9+4+5)

3.

a) What is the use of the following tools in Software Project Scheduling? Also, mention its significance:
   i) WBS
   ii) CPM
   iii) PERT charts

b) As the manager of a software project to develop a product for business application, if you estimate the effort required for completion of the project to be 50 person-months, can you complete the project by employing 50 developers for a period of one month? Justify your answer.

c) Consider a software project with 5 tasks T1-T5. Duration of the 5 tasks (in days) are 15, 10, 12, 25 and 10 respectively. T2 and T4 can start when T1 is complete. T3 can start when T2 is complete. T5 can start when both T3 and T4 are complete. What is the latest start date of the task T3? What is the slack time of the task T4?

(6+6+6)

4.

a) Suppose you are developing a software product in the organic mode. You have estimated the size of the product to be about 1,00, 000 lines of code. Compute the nominal effort and development time.

b) Why is accurate estimation of the effort required for completing a project? Briefly explain the different effort estimation methods that are available. Which would be the most advisable to use and why?

c) What is Risk? Explain various category of Risk in Software Project with suitable example of each.

(4+8+6)

5.

a) What is a Software Process? Why it is required to model a software process? List various tools available for process modeling. Explain any one tool with an example.

b) Define term resource in Project Management. What types of resources are required to develop a software project? Explain the significance of resource allocation phase.

c) What is FP? How it is used for project estimation?

(8+6+4)

6.

a) Suppose you are the project manager of a software project requiring the following activities, and the estimated effort for each task in person-months.

Notation	Activity Name	Effort in person-months
T1	Obtain requirements	1
T2	Design	2
T3	Code actuator interface module	2
T4	Code sensor interface module	5
T5	Code user interface part	3
T6	Code control processing part	1
T7	Integrate and test	6
T8	Write user manual	3

The precedence relation Ti <= {Tj, Tk} implies that the task Ti must complete before either task Tj or Tk can start. The following precedence relation is known to hold among different tasks: T1<=T2<= {T3, T4, T5, T6} <= T7.

i) Draw the Activity Network representation of the project.

ii) Draw the Gantt chart representation of the project.

b) Why is it important to track the progress of a project? Explain various monitoring and controlling techniques to track the project progress.

c) What is Software Reliability? How it is different from Hardware Reliability?

(8+6+4)

7.

a) What is significance and role of Project Closure Analysis in Software Project Management? Write steps to perform closure analysis.

b) Why Pareto analysis is also called the 80-20 rule. Write steps to follow for performing Pareto Analysis.

c) How Object-oriented methodology is different from Procedural methodology of Software Project Development? Explain various issues of Project Management related to a project developed using Object-oriented methodology.

(6+5+7)