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) Mention at least four important characteristics that every good quality software product must possess.

b) Suppose you are the project manager for a medium-sized software development project that is known to be susceptible to schedule delays. Explain how you would manage this risk.

c) What do you understand by the term “phase containment of errors"? Why is it important to achieve phase containment of errors?

d) During project scheduling why is it desirable to break down each task into smaller tasks? What is the desirable granularity to which tasks should be broken down?

e) What is project closure analysis? How are the results of project closure analysis useful?

f) Would it be proper to calculate the number of developers required for a project as a simple division of the effort estimate (in person-months) by the duration estimate (in months)? Explain your answer.

g) Explain the considerations based on which function point metric can be considered superior to lines of code (LOC) metric for software cost estimation.

(7x4)

2.

a) Briefly explain the differences among budget, cost, and price of a software project.

b) Briefly explain how a project manager can effectively track and control the progress of a software project.

c) List three common types of risks that a typical software project might suffer from. Give at least one example of each type of risk. Explain how you can effectively identify the risks that your project is susceptible to.

(6+6+6)

3.

a) Why is it difficult to accurately estimate the effort required for completing a software project? Briefly explain a method for effort estimation.

b) What do you mean by project auditing? Why is it required? Who carries out project auditing?

(10+8)

4.

a) Distinguish between a product and a process and also explain the difference between a process and product metric. Give one example of each type of metric.

b) Suppose you have been appointed as the project manager of an organization. List the major activities you would perform to plan a project. For large projects expected to run for several years it becomes difficult to plan the project accurately. How can you cope up with this situation as the project manager?

c) Is it true that a software product can always be developed faster by having a larger development team of competent software engineers? Justify your answer.

(6+6+6)

5.

a) Explain the important issues that a project manager needs to document in a software project management plan (SPMP).

b) Explain why management of the development of an embedded system is more difficult than traditional software project management. How can development of an embedded system be effectively managed?

c) What do you mean by process modeling? Why is it required? How can a process be modeled?

(6+6+6)

6.

a) Suppose you are the project manager of a large development project. The top management informs that you would have to manage the project with a fixed team size throughout the duration of your project. What would be the likely impact of this decision on your project?

b) Explain how Putnam's model can be used to compute the change in project cost with project duration. What are the main disadvantages of using the Putnam's model to compute the additional costs incurred due to schedule compression?

c) The industry average productivity figure for engineers is only 10 LOC/day. What is the reason for such low productivity? Can we attribute this to the poor programming skill of engineers?

(6+6+6)

7.

a) Identify at least four reasons for project termination. How is project termination review conducted?

b) Identify a suitable life cycle model for developing a software product using the object-oriented paradigm. Justify your answer.

c) Explain the key issues in which management of an object-oriented development project differs from that of a traditional project.

(8+4+6)