

## C9-R3: ADVANCED SOFTWARE PROJECT MANAGEMENT

**NOTE:**

1. Answer question 1 and any FOUR questions from 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) What are the common types of software defects? What metrics can be used to quantify them?
- b) Which life cycle model would you follow for developing a decision support system for managers? Enumerate the reasons for your choice.
- c) Discuss how the pressure from schedule slippages affects the process of software project management.
- d) Why are baselines defined in software project? How do they help in software quality assurance?
- e) Obtain the Effort and Schedule time for a software project estimated with 15,000 lines of codes using COCOMO. Assume all adjustment multipliers to be equal to unity.
- f) Will you recommend decentralized-control team organization or egoless programming for a software project with a large team? Justify your choice.
- g) What do you mean by “Payback analysis” in software Projects?

**(7x4)**

**2.**

- a) What do you mean by software planning? What are the key questions that are involved in software planning? Discuss.
- b) What are the steps of project planning in the context of software projects? State them.
- c) Why is it necessary to evaluate software Projects? What are some techniques that are in use for software evaluation?

**(8+4+6)**

**3.**

- a) What are the problems of a classical waterfall model of software development? Discuss why the waterfall model of software development is also called the “Fail-Late” Lifecycle.
- b) A project manager has been given the information below about a project.

Activity	Duration	Predecessors	Staff	
A	3	---	2	
B	2	---	3	
C	5	A	3	
D	4	B	4	
E	3	B, C	4	
F	2	D	3	
G	8	E, F	2	
H	1	G	3	

- i) Determine the project’s duration and the Critical Path.

- ii) Determine the slack time associated with each activity.

- iii) The project has had a resource limit imposed. No more than four staff may be assigned during any period. Describe the impact that this constraint has on the overall project duration; and, on the schedule of when each activity starts and is completed.

**(6+12)**

**4.**

- a) Why is software project estimation necessary? What are some problems that you would face while estimating software projects?
- b) What are the basic steps involved in software project estimation?
- c) Compute the Function Point value for a software project with the following details:

User Inputs:	15	Number of Files:	9
User Outputs:	22	External Interfaces:	3
Inquiries:	12		

Assume the multipliers at their average values and all the complexity adjustment factors at their average values (3 on a scale of 5).

**(6+4+8)**

**5.**

- a) Software project managers often complain that they find it extremely difficult to measure project performance. Discuss the usefulness of the Earned Value Analysis in this regard.
- b) Using the earned value analysis, show graphically the cost and the schedule variances of a project that is ahead of schedule but is spending correctly.

**(12+6)**

**6.**

- a) What do you mean by Software Configuration Management (SCM)? Why is it necessary? What are the five essential functions of SCM?
- b) What are the five levels of Capability Maturity Model (CMM)? Is it possible for an organization to achieve a higher level of CMM without achieving a lower one?

**(12+6)**

**7.**

- a) State McCall's software quality factors. How is process quality management different from product quality management? What techniques would you employ to enhance software quality?
- b) Distinguish between version control and change control in software configuration management? Describe the procedure you would adopt in each case.

**(9+9)**