

## BE6-R3: 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 do you mean by functional and non-functional requirements of software? Illustrate with examples.
  - b) Under what situations pure waterfall model of software development is more suitable than other development models? Give an example.
  - c) Why is it necessary to plan software projects? What are the functions of software project planning?
  - d) Discuss how a software project manager deals with the risk of unrealistic schedules and budgets.
  - e) Do you agree with the statement that an easy and useful way to estimate software efforts and costs is to estimate the no. of lines of code of the software? Justify.
  - f) What are the five elements that are useful in the estimation of function points for software products?
  - g) What do you mean by "Payback analysis" in software projects?

(7x4)

2.
  - a) What is software engineering? Discuss why one must make use of software engineering to develop reliable and efficient software.
  - b) What do you mean by software crisis? What are some of its indicators?
  - c) What is software re-engineering? Why is it required?

(8+5+5)

3.
  - a) What is risk analysis? What is its significance in project management?
  - b) Identify at least 10 important components of a project plan.
  - c) What is Work Breakdown Structure? Discuss briefly with an example.

(6+6+6)

4.
  - a) A software development project is planned for a small company. The activities, time requirements and precedence relations are as under:

Activity No.	Activity Name	Time	Precedence
1.	Find project needs	3 weeks	-
2.	Analyse project	4 weeks	-
3.	Define subsystems	3 weeks	1
4.	Develop database	4 weeks	1
5.	Identify constraints	1 week	2
6.	Develop programs	12 weeks	3,4,5
7.	Write manual	10 weeks	2
8.	Integration test	3 weeks	6
9.	Implement	4 weeks	7,8

- a) Draw the Project Network Diagram. Identify the critical path in the project network diagram.
- b) Find out the Early start and the Late start schedule. Identify the critical path and the project completion time.
- c) If only one analyst is available to carry out the activities 3 and 4, i.e. activity 4 cannot be started until activity 3 is completed, show the changes that would occur in the project network diagram. Find out the new critical path and the project completion time.

**(6+6+6)**

**5.**

- a) Software project manager 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.
- c) What is review in the Project Management? How technical reviews are conducted during software development?

**(6+6+6)**

**6.**

- a) Compare and contrast between COCOMO and function point model of software sizing.
- b) A software project, to be developed using "C" language, is estimated at 300 Function Points. If a software engineer costs Rs. 50,000 per month, find out an estimate of the cost and the time of developing the software. Also estimate the number of software engineers required. For software projects developed using "C" language, assume 1 function point equals to 50 Lines of Code.
- c) In b) above, if the software is to be compressed by 20%, by what percent will the effort estimate go up?

**(6+8+4)**

**7.**

- a) Discuss how improvements of software economics can be brought about with object-oriented software development.
- b) What is a Software Project Management Plan (SPMP) document? What does it contain? Give a brief example indicating briefly some sections of the document.
- c) Name the different quality factors useful in the context of Software projects. Define each of them.

**(6+6+6)**