

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. State whether the following statements are TRUE or FALSE. In each case, justify your answer.
 - a) When a task along a critical path is completed in less time than the originally estimated time, then it would be safe to infer an earlier completion of the project.
 - b) As a project manager it would be worthwhile on your part to honour a customer request to reduce the project duration by half, provided that the customer agrees to pay for the cost for increased manpower requirements.
 - c) According to the COCOMO model, cost is the most fundamental attribute of a software product, based on which size and effort are estimated.
 - d) Project managers normally use GANTT charts for doing resource allocation, whereas PERT charts are used for monitoring and controlling the progress of the project.
 - e) Size of a project, as used in COCOMO is the size of the final executable code in bytes.
 - f) If you plan to undertake the development of a product in which the user requirements are not very clear, then the prototyping life cycle model should be preferred.
 - g) The number of development personnel required for any software development project can be obtained by dividing the total (estimated) effort by the total (estimated) duration of the project.

(7x4)

2.
 - a) What are the most severe disadvantages of using LoC (lines of code) as a project size metric? How does function point metric overcome these problems?
 - b) In which unit can you measure the productivity of a software development team? List three important factors that affect the productivity of a software development team.
 - c) List three common types of risks that a typical software project might suffer from. Explain how you can identify the various risks that your project is susceptible to.

(6+6+6)

3.
 - a) What is rapid prototyping and how is it employed in the systems development process?
 - b) Why is it difficult to estimate accurately the effort required for completing a software project? Briefly explain the use Case Point Approach for the effort estimation.
 - c) What do you understand by the term "phase containment of errors". Why is it important to have phase containment of errors? How can phase containment of errors be achieved?

(6+6+6)

4.

- a) What do you understand by a "critical path" in a project schedule? Can there be more than one critical path in a project schedule? Why is it important for the project manager to identify the critical paths in a project schedule?
- b) Explain, how various defects detected in a project can be effectively collected, kept track of and ensured that they have been resolved satisfactorily.
- c) What is the aim of project closure analysis? Who participate in this analysis? What is the outcome of this analysis? How are the analysis results useful?

(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) Assume that there are many ways of reducing a certain risk. Explain, how you can choose the best risk reduction technique to use.

(6+6+6)

6.

- a) When does the project planning activity start and end in a software life cycle? List the important activities that software project managers perform during project planning.
- b) What are the different categories of software development according to the COCOMO estimation model? Give examples of product developments belonging to each of these categories.
- 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) 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.
 - i) Draw the Gantt Chart and PERT charts for the project.
 - ii) When is the latest start date of the task T3? What is the slack time of the task T4? What is the slack time of the task T2?
- b) Explain the reasons behind the following assertion: "Adding more manpower to a late project makes it later".

([8+6]+4)