B. Tech.

(SEM. IV) EXAMINATION, 2008-09

SOFTWARE ENGINEERING

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

Note :   (1)   Attempt **all** questions.

(2)   Each question carries **equal** marks.

1   Answer any **four** parts :   4×5=20

(a)   Define software engineering. Discuss its main objectives.

(b)   Differentiate between a program and a software product.

(c)   Define a software process with suitable example.

(d)   Explain why a software system that is used in a real-world environment must change or become progressively less useful.

(e)   Define the following :

(i)   Prototyping models

(ii)   Evolutionary model.

(f) What do you mean by feasibility study? Explain various important activities that are carried out during the feasibility study phase.

2 Answer any **four** parts of the following : 4×5=20

   (a) Explain with suitable examples the different types of requirement problems that should be identified and resolved during the requirements analysis activity.

   (b) Descibe three types of non-functional requirement which may be placed on a system. Give examples of each of these types of requirement.

   (c) Why do traceability matrices become difficult to manage when there are many system requirements? Explain with suitable example.

   (d) Who are the different categories of uses of the SRS document? What are their expectations from the SRS document?

   (e) Describe ISO 9000 quality models.

   (f) Define the following :

      (i) Varification and Validation

      (ii) IEEE standards for SRS.

3   Answer any **two** parts :   **2×10=20**

(a)   Discuss their advantages and disadvantages as far as distributability is concerned of the dataflow model and the object model, with an example.

(b)   Define the following with example :

     (i)   Function oriented design.

     (ii)   Top-down and Bottom-up design.

(c)   Describe the following software measurement and metrics.

     (i)   Function Point (FP) based measures.

     (ii)   Cyclomatic Complexity measures.

4   Answer any **two** parts :   **2×10=20**

(a)   What should be the criteria for designing test cases? Derive a set of test cases for the following :

     A sort routine which sorts arrays of integers.

(b)   What are drivers and stub modules in the context of integration and unit testing of a software product? Why are stubs and driver modules required?

(c)   (i)   What do you understand by the cleanroom startegy? What are its advantages?

     (ii)   Define stress testing? Why is stress testing applicable to only certain types of systems?

5 Answer any **two** parts : 2×10=20

(a) What are the different categories of software development projects according to the COCOMO estimation model ? Give examples of software product development projects beloging to each of these categories.

(b) What are the important types of risks that a project might suffer from? How would you identify the risks that a project may be susceptiable to during the project planning stage?

(c) Define the following :

(i) Software configuration Management.

(ii) An oveview of CASE tools.