



Code No. : 6114/S

FACULTY OF INFORMATICS
B.E. 3/4 (IT) I Sem. (Supple.) Examination, July 2014
SOFTWARE ENGINEERING

Time: 3 Hours]

[Max. Marks: 75

Note : Answer **all** questions from Part – **A** and **any five** questions from Part – **B**.

PART – A

Answer **all** the questions. **All** questions carry **equal** marks.

(25 Marks)

1. Define the following terms :
 - a) Engineer
 - b) Engineering
 - c) Software Engineering.
2. Explain what is wrong with the notion that Software Engineering is too time consuming and interferes with programmer's productivity.
3. What is module coupling ?
4. List any three limitations of prototype life cycle model.
5. Differentiate the following :
 - a) Analysis and Design
 - b) Component-based development and Custom development.
6. What is scenario-based modeling ?
7. What is proactive risk strategy ? How is it different from reactive risk strategy ?
8. What is a functional requirement ? How is it different from a non-functional requirement ? Give an example.
9. Is software engineering an engineering discipline ? Yes/No. Justify your answer.
10. What is regression testing ?



PART – B

Answer **any five** questions :

(5×10=50 Marks)

11. a) Many of the theoreticians from the other branches of engineering argue that Software Engineering is not an engineering discipline.
a) What do you think is the basis/reason for their argument ?
b) Do you agree or disagree with the statement ? Justify your answer. **(2+3)**
- b) Describe at least three techniques for creating high-quality software that are not commonly followed when developing code in an academic environment. Discuss methods that could be used to promote their use in an academic world. **5**
12. a) Describe the essential differences in focus and concern between these three software engineering activities : Analysis, Design and Implementation. At each stage, discuss why this change in focus is appropriate. **5**
- b) The publisher of a social services resource guide has contracted for the development of an electronic version of its guide. The product has been loosely defined to date due to the limited knowledge of technology available to the user community and to the limited expertise of the publisher's staff. The development team for this project will consist of two employees who are new to the company and one programmer with minimal experience. Which process model would best serve the needs of this project ? Justify ? **5**
13. a) Discuss the concept of Extreme Programming (XP) Process Model. Your answer shall include a diagram representing the process, and a brief description of the framework activities. **7**
- b) Assume that a company is developing software products or tailored software and has a model which is not architecture-centric i.e. the company does not use software architectures. What according to you, are the problems the company is going to face in near future (if at all) ? **3**
14. a) List and briefly explain the three golden rules related to user interface design. **3**
- b) What do mean by software usability ? How do you determine whether usability exists within a software system ? Give an example of a software system that (you have used) has the best and worst usability. **4**
- c) Is it possible to begin coding immediately after an analysis model has been created ? Explain your answer and then argue the counterpoint. **3**



15. a) Come up with a state machine diagram to represent the dynamic behaviour of the dehumidifier class as described below :

The dehumidifier constantly senses the environment to check the humidity level. If the humidity is ok, it goes to idle mode and continues sensing humidity is high, it starts dehumidification. During this process if it finds the water tank full then it will stop work and turn off the humidifier. Otherwise, after dehumidification it will continue sensing the environment.

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b) Read the following scenario carefully and derive possible test cases using the Black Box Testing Technique.

A shopping mall gives discounts according to following slabs for bulk purchases :

Quantity	Discount Rate
First 10 units	No Discount
Units more than 10 less than or equal to 20	10% discount
Units more than 20 less than or equal to 30	20%
More than 30 units	30%

In addition to the above discount an additional 5% discount is given to the senior citizens. There is a special category of wholesale dealers who will be given a flat 40% discount for all purchases. Category of dealers is “Normal”, “Senior Citizen” or “Whole dealer”.

Design the possible Black Box Test Cases for the above scenario.

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16. Discuss the concept of Constructive Cost Model (COCOMO) in detail.

10

17. Differentiate the following :

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- a) Incremental Testing and Big-Bang Testing
- b) Software Engineering and System Engineering
- c) Risk Projection and Risk Refinement
- d) Alpha Testing and Beta Testing
- e) Iterative Software Development and Incremental Software Development.

18. a) List and briefly explain any three metrics for the design model.

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b) Discuss the following design concepts :

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- i) Modularity
- ii) Functional Independence
- iii) Refactoring.