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IT301

[ET]

Enrol. No. .....

END SEMESTER EXAMINATION : NOV. – DEC., 2017

SOFTWARE ENGINEERING

Time : 3 Hrs. *Maximum Marks : 70*

Note: ***Attempt questions from all sections as directed.***

SECTION – A (30 Marks)

Attempt any **five** *questions out of* **six.**
Each question carries **06** *marks.*

1. Discuss the significance and use of requirement engineering. What are functional and non-functional requirements?

2. Explain in detail an Elevator system using the State Transition diagram.

3. Mention the important phases of spiral model of Software development. Compare the relative merits and demerits of spiral model with the prototype model.

4. List the different types of risks that a typical software might suffer from during the development phase. Explain essential strategies for Risk Identification and Risk Analysis.

P.T.O.

5. Is software a product or a process? Which according to you has more relevance the product or process. Justify your answer with the help of suitable example.

6. Explain the metric Function Count. Compute the function point value for a project with the following information domain characteristics:

Number of user inputs=50

Number of user outputs=44

Number of user enquiries=18

Number of internal logic files=30

Number of external interface files=16

Assume that all weighing factors are average and all complexity adjustment factor values are essential.

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three.**
Each question carries **10** *marks.*

7. (a) Consider a program for the determination of the nature of roots of a quadratic equation. Its input is a triple of positive integers (say a,b,c) and values may be in the interval [0,100]. The program output may have one of the following words.

[Not a quadratic equation; Real roots; Imaginary roots; Equal roots].

Identify the equivalence class test cases for input and output domains. (5)

(b) Explain coupling among modules of a Software. Discuss the types of Coupling with regard to design of a Software. (5)

8. (a) Some experimental evidence suggests that the initial size estimate of a project affects the nature and the results of the project. Consider two different managers charged with developing the same application. One estimates that the size of the application will be 50,000 lines, while the other estimates that it will be 100,000 lines. Discuss how these estimates affect the project throughout its life cycle. (5)

(b) Discuss the purpose of Information Flow Metrics during development of a Software Project. (5)

9. (a) What is a software failure? Explain necessary and sufficient conditions for software failure. Discuss strategies for good test case design that has high probability of finding an as yet undiscovered error. (5)

(b) Briefly discuss and differentiate between the following :

(i) Verification & Validation

(ii) Alpha and Beta testing (5)

P.T.O.

SECTION – C (20 Marks)

(Compulsory)

10. (a) A software has to be developed for automating the manual library of a University. The system should be stand alone in nature. It should be designed to provide functionalities as explained: Issue of books, Return of books, Query processing and Report Generation. Generate the following UML diagrams for this case :

(i) Use Case diagram

(ii) Class diagram (10)

(b) Admission to a professional course is subject to the following conditions :

Marks in Mathematics >=60
Marks in Physics >=50
Marks in Chemistry >=40
Marks in all three courses >=200

If aggregate marks of an eligible candidate are more than 225, he/she will be eligible for honors course, otherwise he/she will be eligible for pass course. The program reads the marks in the three courses and generates the following outputs :

(i) Not Eligible

(ii) Eligible to Pass Course

(iii) Eligible to Honors Course

Design test cases using decision table testing technique. (10)