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M. Tech 3rd Semester Examination

Advanced Software Engineering Concepts

CSE1-E01/MT-302

Time : 3 Hours   **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

1. (a)   How an iterative enhancement model is helpful during maintenance? Explain various stages of this model.

                                                                                (5)

   (b)   Explain the classic model of life cycle for software engineering. How is it different from spiral model? Explain in detail.   **(5)**

2. What are the essential characteristics of software engineering? How it is different from other engineering discipline such as house and bridge design etc. Explain in detail the various phases in a software development project.   **(10)**

3. (a)   List and discuss the major quality requirement of a software specification document.   **(5)**

   (b)   What are the major uses of a requirement specification document? In what way this affects the style and content of a requirement document?   **(5)**

4. (a)   What is requirements elicitation? Explain about various software requirements elicitation techniques.   **(5)**

   (b)   What is requirements engineering? Elaborate on the good practices for requirements engineering.   **(5)**

5. The clock shows the time of day. Using buttons, the user can set the hours and minutes fields individually, and choose between 12 and 24-hour display. It is possible to set one or two alarms. When an alarm fires, it will sound some noise. The user can turn it off, or choose to 'snooze'. If the user does not respond at all, the alarm will turn off itself after 2 minutes. 'Snoozing' means to turn off the time, but the alarm will fire again after some minutes of delay. This 'snoozing time' is pre-adjustable. Identify the top-level functional requirement for the clock, and model it with a use-case diagram. **(10)**

6. (a) What is the significance of activity diagram? How will you draw an activity diagram? Explain it with the help of an example. **(5)**

   (b) Discuss the different phases of unified process for software development. **(5)**

7. What is the difference between white and black box testing? Is determining test cases easier in black or white box? Is it correct to claim that if white box testing is done properly, it will achieve close to 100% path coverage? **(10)**

8. Let us consider an example of grading the students in an academic institution. The grading is done according to the following rules.

Marks Obtained	Grade
80 - 100	Distinction
60 - 79	First division
50 - 59	Second division
40 - 49	Third division
0 - 39	Fail

Generate test cases using equivalence class testing technique. **(10)**

9. Write short notes for the following :

   (i) Execution Based Testing

   (ii) Software Quality

   (iii) Challenges of the requirement phase

   (iv) Prototype model

   (v) Perti Nets

   (vi) Differentiate between static and dynamic UML diagram.

   (vii) Data Flow Diagrams

   (viii) Requirements Elicitation

   (ix) CMM

   (x) ISO 9000.   **(2×10=20)**