Register Number.....

M.C.A DEGREE EXAMINATIONS: OCTOBER / NOVEMBER – 2008

Third Semester

P07CA303 SOFTWARE ENGINEERING

Time: Three Hours **Maximum Marks: 100**

Answer ALL questions: -

PART A (20 x 1 = 20 Marks)

1. What are the three generic phases of software engineering?

   A. definition, development, support
   B. what, how, where
   C. programming, debugging, maintenance
   D. analysis, design, testing

2. The prototyping model of software development is

   A. A reasonable approach when requirements are well defined.
   B. A useful approach when a customer cannot define requirements clearly.
   C. The best approach to use for projects with large development teams.
   D. A risky model that rarely produces a meaningful product.

3. The objective of software project planning is to

   A. convince the customer that a project is feasible.
   B. make use of historical project data.
   C. enable a manager to make reasonable estimates of cost and schedule.
   D. determine the probable profit margin prior to bidding on a project.

4. Software feasibility is based on which of the following

   A. business and marketing concerns
   B. scope, constraints, market
   C. technology, finance, time, resources
   D. technical prowess of the developers

5. What task is not performed as part of software requirements analysis?

   A. evaluation and synthesis
   B. modeling and problem recognition
   C. planning and scheduling
   D. specification and review

6. Use-cases are scenarios that describe

   A. how software is to be used in a given situation.
   B. how CASE tools will be used to construct the system.
   C. the build plan for a software product.
   D. the test cases for a software product.

7. Which of the following is not a guideline for representing requirements?

   A. diagrams should be restricted in number and consistent in use
   B. representation format and content should be relevant to the content
   C. representations should be revisable
   D. use no more than 7 plus or minus 2 colors in any diagrams

8. The data flow diagram

A. depicts relationships between data objects
B. depicts functions that transform the data flow
C. specified major logical decisions as they occur
D. indicates system reactions to external events

9. Which of the following is not an area of concern in the design model?

A. architecture
B. data
C. interfaces
D. project scope

10. To achieve high modularity of software components you need

A. high coupling and high cohesion
B. high coupling and low cohesion
C. low coupling and high cohesion
D. low coupling and low cohesion

11. The following common design issues surface for almost every user interface:

A. adaptive user profiles and functional shortcuts
B. error handling and system response time
C. resolution of graphics displays and design of icons
D. coupling and cohesion values

12. A decision table should be used

A. to document all conditional statements
B. to guide the development of the project management plan
C. only when building an expert system
D. when a complex set of conditions and actions appears in a component

13. Which of these are objectives for software testing?

A. determine the productivity of programmers
B. eliminate the need for future program maintenance
C. eliminate every error prior to release
D. uncover software errors

14. The testing technique that requires devising test cases to exercise the internal logic of a software module is called

A. behavioral testing
B. black-box testing
C. grey-box testing
D. white-box testing

15. The cyclomatic complexity metric provides the designer with information regarding the number of

A. cycles in the program
B. errors in the program
C. independent logic paths in the program
D. statements in the program

16. The best reason for using Independent software test teams is that

A. software developers do not need to do any testing
B. strangers will test the software mercilessly
C. testers do not get involved with the project until testing begins
D. the conflicts of interest between developers and testers is reduced

17. Key concept of quality control is that all work products

A. are delivered on time and under budget
B. have complete documentation
C. have measurable specifications for process outputs
D. are thoroughly tested before delivery to the customer

18. The ISO quality assurance standard that applies to software engineering is

A. ISO 9000 B. ISO 9001
C. ISO 9002 D. ISO 9003

19. Which of the following provide useful measures of software quality?

A. correctness, performance, integrity, usability
B. reliability, maintainability, integrity, sales
C. correctness, maintainability, size, satisfaction
D. correctness, maintainability, integrity, usability

20. How much of software maintenance work involves fixing errors?

A. 20 percent B. 40 percent
C. 60 percent D. 80 percent

PART B (5 x 16 = 80 marks)

21 a) i) Discuss Rational Unified Process Model with a neat sketch. Compare this model with the Waterfall Model. [8]

ii) What are the basic information required for Software Cost Estimation. Discuss one estimation technique used for cost estimation. [8]

OR

b) i) What is so special in the Agile Software Development Model ? Discuss the model with a neat sketch. [8]

ii) What is the importance of Risk Analysis? List out very common risks involved in the software development process. [8]

22. a) i) Explain the different methods of collecting requirements from the customers. Discuss some of the problems that occur when requirements must be elicited from **three or four different customers**. [8]

ii) Develop DFDs to demonstrate an **E-Banking System.** [8]

OR

b) i) Explain the different activities of Requirements Engineering phase. [8]

ii) Draw DFDs to explain: **ONLINE RAILWAY RESERVATION SYSTEM** [8]

23. a) i) Discuss the important principles of Software Design [8]

ii) **"The Computerized Railway Ticket Vending Machine "** – similar to Automatic Teller Machine system used in the Bank. This system will accept the credit card and print train ticket for the Travel plan given by the passenger for their train journey. Design a user-friendly Input Screen required to enter the travel plan of the passenger. [8]

OR

b) i) Discuss the following : Pattern Based Design and Class Based Design [8]

ii) Explain the importance of User-Interface Design. Describe a scenario for the best and worst user interface. [8]

24. a) i) Discuss the important principles of Software Testing. Define black box and white box testing. What are the advantages of each approach? Why are both necessary? [8]

ii) For the following pseudo code, identify all feasible paths and test it. [8]

```
read a, b, c;
x = 5; y =7;
if ( a>b && b > c)
        {
                a = a + 1;
                x = x + 6;
                if ( a=10 || b > 20)
                        {
                                b = b + 1;
                                x = y + 4;
                        }
                if (a  < 10 || c =20)
                        {
                        b = b + 2;
                        y = 4;
                        }
                a = a + b + 1;
                y = x + y;
        }
if ( a > 5 || c < 10)
        {
                b = c + 5;
                x = x + 1;
        }
write x, y;
```

OR

b) i) Describe the roles of Software Engineering Group (SEG) and Independent Testing Group (ITG). Why is there often tension between SEG and ITG? Is this healthy? [6]

ii) A Binary search routine searches a list of names in alphabetical order and returns true if the name is in the list and returns false otherwise. Write the pseudo code and apply the basis path testing to test this code. [10]

25. a) i) Discuss the different components of Software Configuration Management [8]

ii) What is the importance of review? Explain how technical reviews are planned and conducted in the industries. [8]

OR

b) Discuss the following topics in detail: i) Software Quality Assurance [8]
ii) Software Reliability [8]

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