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B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Fifth Semester

COMPUTER SCIENCE AND ENGINEERING

U07CS504: Software Engineering

Time: Three hours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. Which of the following is/are common to software engineering and hardware engineering?
   (i) Enforce tight control on the development process in order to meet deadlines.
   (ii) Risk management
   (iii) Use of robots in production lines
   (iv) Conformance to quality standards throughout development
   (v) Use of CASE tools to support development
   (a) iii and v (b) i, ii and iv (c) iii and iv (d) i and v

2. The CPU of a computer consists of an Arithmetic Logical Unit and a Control Unit. Intel and AMD are two types of CPUs, which are widely used in computers. Consider the following classes.
   (i) CPU and AMD (ii) User and Computer (iii) CPU and ALU.
   The correct relationships between the above classes are
   (a) (i) inheritance (ii) association (iii) inheritance.
   (b) (i) association (ii) inheritance (iii) aggregation.
   (c) (i) association (ii) inheritance (iii) association.
   (d) (i) inheritance (ii) association (iii) aggregation.

3. Which of the following is / are true with regard to the spiral model of software development?
   (i) It is an evolutionary model that includes an explicit risk analysis phase and also an incremental software development model.
   (ii) It is a universal model that may incorporate other models such as the linear sequential model or the prototyping model during different epochs.
   (iii) It is applicable for projects with clear and stable requirements.
   (iv) It is not suitable for a project such as developing a nuclear power plant control system
   (a) i and ii (b) ii and iii (c) iii and iv (d) i and iv

4. Which of the following is a true advantage of evolutionary prototyping over throw away prototyping?

(a) Evolutionary prototyping cannot be applied to applications where the requirements are vague and ambiguous.

(b) A working version of the system is available for customer comments from the beginning.

(c) Evolutionary prototyping could be used when requirements are unstable and continue to change with time.

(d) The effort pumped into the initial prototype is not wasted in throw away prototype as in case of evolutionary

5. Which of the following requirements is a / are non functional requirement(s) of a library system?

(i) The system shall not disclose any personal information about a customer apart from name and reference number.

(ii) The user should be able to search for a library item by specifying a keyword.

(iii) The system should be easy to use by inexperienced users and hence should provide a graphical user interface

(iv) Students should be able to reserve a library item online.

(v) The system should respond quickly to user queries

(a) i, ii (b) i, iii, v (c) ii, iii, iv (d) iii, iv, v

6. The correct order of the activities of the Waterfall Model is

(a) Requirement analysis and specification, Coding, Design, Maintenance, Testing

(b) Design, Coding, Implementation, Testing, Maintenance.

(c) Requirement analysis and specification, Design, Coding, Testing, Maintenance

(d) Feasibility study, Coding, Design, Implementation, Maintenance

7. The items in column X have to be matched with the descriptions in column Y.

	COLUMN X		COLUMN Y
1	Unit testing	A	The finished system tested with users
2	Subsystem testing	B	The whole finished system tested by develop
3	System testing	C	Individual components are tested
4	Acceptance testing	D	Collections of components are tested

Which of the following match(es) is appropriate?

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(a) 1 & C 2 & D 3 & A 4 & B (c) 1 & C 2 & D 3 & B 4 & A

(b) 1 & D 2 & C 3 & A 4 & B (d) 1 & B 2 & D 3 & C 4 & A

8 An erroneous program module was handed over to a developer. He changed the code and checked whether it works according to the requirements specification. What did he do?

(a) Beta Testing (b) Top-Down Testing

(c) Regression Testing (d) Bottom-Up Testing

9. The number of function points of a proposed system is calculated as 500. Suppose that the system is planned to be developed in Visual Basic and the LOC/FP ratio of Visual Basic is 50. Estimate the effort (E) in required to complete the project using the effort formula of basic COCOMO given below. $E = a (KLOC)^b$. Assume that the values of a and b are 2.5 and 1.0 respectively

(a) 25 person months (b) 75 person months

(c) 62.5 person months (d) 25 000 person months

10. Data integration in CASE tools means

(i) Different CASE tools can exchange data and

(ii) Results from one tool can be passed to another tool.

(iii) CASE tools cannot share data structures.

(iv) All tools use a single file.

(a) i, ii (b) ii, iv (c) i, iii (d) i, iv

PART B (10 x 2 = 20 Marks)

11. Why is software engineering so important in building software?
12. Define software process.
13. Give the significance of software prototyping.
14. List the merits of incremental model?
15. What is System Engineering?
16. Specify the role of requirement engineering phase in software building.
17. List the principles of a software design
18. What is Software Configuration Management?
19. Brief the significance of boundary value analysis?
20. Give the procedure of the Delphi method.

PART C (5 x 14 = 70 Marks)

21 (a) Describe iterative waterfall and spiral model for software life cycle and discuss va activities in each phase.

(OR)

(b) Discuss in detail about the System Engineering process.

22 (a) Elucidate the importance of prototyping approaches.

(OR)

(b) Discuss the following

i. Significance of Functional Modeling.

ii. Structural Modeling.

23 (a) i. Enumerate the design principles.

ii. Explain the design steps of the transform mapping.

(OR)

(b) i. Discuss about real time systems.

ii. What is Software Configuration Management? How are SCM tasks practiced over t operational life of software?

24 (a) i. Discuss the reasons behind performing black box and white box testing models.

ii. How to compute the cyclomatic complexity?

(OR)

(b) Distinguish between verification and validation and discuss various testing strategie for conventional software?

25 (a) i. Write short note on the various estimation techniques. (7)

ii. What are the metrics that are computed during error tracking activity? (7)

(OR)

(b) i. What are the types of software maintenance? (4)

ii. Explain in detail about COCOMO model. (10

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