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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**(An Autonomous Institute Affiliated to AKTU, Lucknow)****B.Tech****SEM: IV - THEORY EXAMINATION (2022-2023)****Subject: Software Engineering****Time: 3 Hours****Max. Marks: 100****General Instructions:****IMP:** Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A**20****1. Attempt all parts:-**

- 1-a. On what basis is plan-driven development different from that of the software development process (CO1) 1
- (a) Based on the iterations that occurred within the activities.
 - (b) Based on the output, which is derived after negotiating in the software development process.
 - (c) Based on the interleaved specification, design, testing, and implementation activities.
 - (d) All of the above
- 1-b. Which of the following refers to internal software equality?(CO1) 1
- (a) Scalability
 - (b) Reusability
 - (c) compatibility
 - (d) Usability
- 1-c. Requirement engineering process includes which of these steps (CO2) 1
- (a) Software Requirement specification & Validation

- (b) Feasibility study
 - (c) Requirement Gathering
 - (d) All of above
- 1-d. What is level 2 in DFD means?(CO2) 1
- (a) Highest abstraction level DFD is known as Level 2.
 - (b) Level 2 DFD depicts basic modules in the system and flow of data among various modules.
 - (c) Level 2 DFD shows how data flows inside the modules mentioned in Level 1.
 - (d) All of the above
- 1-e. Which of these are part of the class operation specification format?(CO3) 1
- (a) name
 - (b) parameter list
 - (c) return-type list
 - (d) all of the mentioned
- 1-f. The most desirable form of cohesion is (CO3) 1
- (a) Logical cohesion
 - (b) Procedural cohesion
 - (c) Functional cohesion
 - (d) Temporal cohesion
- 1-g. White box testing is also classified as (CO4) 1
- (a) Structural testing
 - (b) Design based testing
 - (c) Error Guessing technique
 - (d) none of the mentioned
- 1-h. Software testing is: (CO4) 1
- (a) The process of demonstrating the errors are not present
 - (b) The process of establishing confidence that a program does what it is supposed to do
 - (c) The process of executing the program to show that it is working as per specification
 - (d) The process of executing the program with the intent of finding errors
- 1-i. BPR stands for (CO5) 1

- (a) Business process re-engineering
- (b) Business product re-engineering
- (c) Business process requirements
- (d) None of the mentioned

- 1-j. COCOMO cost model (CO5) 1
- (a) It takes project, product hardware and personnel attributes into account when formulating a cost estimate.
 - (b) In it server provides set of services and set of clients uses these services.
 - (c) Extent to which standards are used to achieve interoperability.
 - (d) None of these

2. Attempt all parts:-

- 2.a. Explain software components.(CO1) 2
- 2.b. Write characteristics of SRS. (CO2) 2
- 2.c. List out various features of object oriented design. (CO3) 2
- 2.d. Explain code inspection. (CO4) 2
- 2.e. Which regression test selection technique exposes faults caused by modifications.(CO5) 2

SECTION B

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3. Answer any five of the following:-

- 3-a. Discuss the advantages and drawbacks of spiral model. (CO1) 6
- 3-b. Discuss main objectives of a software process models. Give suitable example.(CO1) 6
- 3-c. What is meant by " Formal Technical Review"? Should it assess both programming style as well as correctness of software? Give reasons. (CO2) 6
- 3-d. Explain the importance of requirements. How many types of requirements are possible in a software and why? (CO2) 6
- 3.e. Explain in detail about the characteristics and criteria for a good design.(CO3) 6
- 3.f. Explain how CMM encourages continuous improvement of the software process.(CO4) 6
- 3.g. Describe configuration management activities. Draw the Performance of change request form.(CO5) 6

SECTION C

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4. Answer any one of the following:-

4-a. Name the two fundamental principles that are used extensively in software engineering to tackle the complexity in developing large programs. Explain these two principles. By using suitable examples explain how these two principles help tackle the complexity associated with developing large programs.(CO1) 10

4-b. Describe SDLC. Also elaborate on the various issues of Software life cycle.(CO1) 10

5. Answer any one of the following:-

5-a. Draw and explain Use-Case diagram for Restaurant management system for all possible use cases.(CO2) 10

5-b. Explain DFD. Explain basic blocks, which are used to build DFD with suitable example. Also give the importance of data dictionary.(CO2) 10

6. Answer any one of the following:-

6-a. Describe object oriented design. Explain Generalization and Inheritance with example.(CO3) 10

6-b. Explain the modularity, cohesion, and coupling . What role they play in software design? (CO3) 10

7. Answer any one of the following:-

7-a. Consider a program to classify the type of triangle. The inputs for the sides of triangle(x,y,z) ranges from 1-100 and the output will be: isosceles, scalene, equilateral or not a triangle. Design test cases for this using any technique of black box testing.(CO4) 10

7-b. Explain Cyclomatic complexity. Write all methods which are used to calculate the Cyclomatic complexity of a control flow graph.(CO4) 10

8. Answer any one of the following:-

8-a. Explain software risks analysis and management process.(CO5) 10

8-b. Describe the different categories of software development projects according to the COCOMO estimation model . Give an example of software product development projects belonging to each of these categories.(CO5) 10