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Roll No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

(SEM: III) THEORY EXAMINATION (2022-2023)

Subject: Software Engineering

Time: 3Hours   Max. Marks: 100

General Instructions:

IMP: Verify that you have received question paper with 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.   What does SDLC stands for? (CO1)   1

         (a). System Design Life Cycle

         (b). Software Design Life Cycle

         (c). Software Development Life Cycle

         (d). System Development Life cycle

1-b.   The user system requirements are the parts of which document? (CO1)   1

         (a). SDD

         (b). SRS

         (c). DDD

         (d). SRD

1-c.   Which of the following elicitation techniques is a viewpoint based method?   1

(CO2)

         (a). FODA

         (b). QFD

(c). CORE

(d). IBIS

1-d.   What does RAD stand for? (CO2)   1

     (a). Rapid Application Document

     (b). Rapid Application Development

     (c). Relative Application Development

     (d). None of the above

1-e.   Which of the following model will be preferred by a company that is planning to deploy an advanced version of the existing software in the market? (CO3)   1

     (a). Spiral

     (b). Iterative Enhancement

     (c). RAD

     (d). Both (b) and (c)

1-f.   Which one of the following activities is not recommended for software processes in software engineering? (CO3)   1

     (a). Software Evolution

     (b). Software Verification

     (c). Software Testing & Validation

     (d). Software designing

1-g.   Which of the following is used to predict the effort as a function of LOC or FP? (CO4)   1

     (a). COCOMO

     (b). FP-based estimation

     (c). Both COCOMO and FP-based estimation

     (d). Process-based estimation

1-h.   Which of the following is an example of Black Box and Functional Processing? (CO4)   1

     (a). First Generation Language

     (b). Second Generation Language

     (c). Third Generation Language

     (d). Fourth Generation Language

1-i.   Which of the following refers to internal software equality? (CO5)   1

     (a). Scalability

     (b). Reusability

     (c). Reliability

     (d). Usability

1-j.   What does a direct arc or line signify? (CO5)   1

    (a). Data flow

    (b). Data Process

    (c). Data stores

    (d). None of the above

Attempt all parts:-

2.a.   What do you mean by the term software reverse engineering?(CO1)   2

2.b.   What are the characteristics of Software? (CO2)   2

2.c.   What is Cohesion and Coupling? (CO3)   2

2.d.   What are the various phases of SDLC? (CO4)   2

2.e.   Mention the formula to calculate the cyclomatic complexity of a program?(CO5)   2

SECTION – B

Answer any five of the following-

3-a.   What is the difference between black-box and white box testing? Give an example of bug that is detected by the black box test suit, but is not detected by the white box test suit and vice versa. (CO1)   6

3-b.   What is a prototype model? Under what circumstances is it beneficial to construct a prototype model? (CO1)   6

3-c.   What are different CMM levels? What does CMM level specify? (CO2)   6

3-d.   Differentiate Data Flow Diagram (DFD) with Entity-Relationship Diagram. Draw the E-R diagram of Course registration process of students at an institute.(CO2)   6

3-e.   What is the difference between Verification and Validation? (CO3)   6

3-f.   What are the different type of maintenance that a software product might need? Why are these maintenance required?(CO4)   6

3-g.   Describe decomposition levels of abstraction and modularity concepts in software design (CO5)   6

SECTION – C

Answer any one of the following-

4-a.   List several software process paradigms. Explain how both waterfall model and prototyping model can be accommodated in the spiral process model (CO1)   10

4-b.   Explain V Process Model and incremental Model with the help of suitable diagram. (CO1)   10

Answer any one of the following-

5-a.   Narrate the importance of software specification of requirements. Explain a typical SRS structure and its parts (CO2)   10

5-b.   Write short note on the following with example (CO2)   10

    i.   Decision Table

    ii.   Feasibility Study

    iii.   Software Quality Assurance (SQA).

Answer any one of the following-

6-a.	Enumerate the different types of cohesion and coupling? What roles they play in software design? Describe the properties of best coupling and cohesion giving examples of each.(CO3)	10
6-b.	What do you understand by the term structured analysis and structured design? Explain how the DFD model can help one understand the working of a software system (CO3)	10

Answer any one of the following-

7-a.	What do you mean by test case? Describe Top-Down and Bottom-up testing strategies along with their advantages and disadvantages.(CO4)	10
7-b.	What is Regression testing? What is its use in integration testing? Differentiate between white box and black box testing.(CO4)	10

Answer any one of the following-

8-a.	Draw the general architecture of CASE tool and explain its various components in detail. Also discuss the importance of CASE tools in a software life cycle along with its limitations. (CO5)	10
8-b.	Discuss in detail the different types of maintenance that a software product might need. Also Describe the COCOMO model. (CO5)	10