Printed Page:-Subject Code:- AIT0401 Roll. No: NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA (An Autonomous Institute Affiliated to AKTU, Lucknow) **B.Tech** SEM: IV - THEORY EXAMINATION (2024-2025) **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. The agile software development model is built based on .(CO1,K2) 1 Linear Development (a) **Incremental Development** (b) (c) Iterative Development Both Incremental and Iterative Development (d) 1-b. Model selection is based on (CO1,K2) 1 Requirements (a) (b) Development team & users Project type & associated risk (c) All of the above (d) 1-c. Mention the meaning of requirement elicitation in software engineering.(CO2,K2) 1 All of the above (a) Gathering of requirement (b) Understanding of requirement (c) (d) Getting the requirements from client The context diagram is also known as _____.(CO2,K3) 1-d. 1 (a) Level-0 DFD (b) Level-1 DFD

(c) Level-2 DFD

- (d) All of the above
- 1-e. Select the statement that best describes functional cohesion.(CO3,K3)

(a) It refers to the extent to which the tasks performed within a single module are related and contribute to a single well-defined objective or purpose.

(b) It measures the degree to which a module is independent of other modules in a system.

(c) It assesses how well a module can be reused in different contexts or applications.

(d) It evaluates the ease with which a module can be understood and maintained by software developers.

- 1-f. The worst type of coupling is.(CO3,K2)
 - (a) Content
 - (b) Common
 - (c) External
 - (d) Data Cupling
- 1-g. Integration testing techniques are:(CO4,K2)
 - (a) Black box and White box testing
 - (b) Top-down and Bottom-up testing
 - (c) Equivalence partitioning and Boundary value analysis
 - (d) Unit testing and System testing

1-h. Software mistakes during coding is known as:(CO4,K2)

- (a) Failures
- (b) Defects
- (c) Bugs
- (d) Errors

1-i. Perfective maintenance refers to enhancements:(CO5,K2)

- (a) Making the product better
- (b) Making the product faster and smaller
- (c) Making the product with new functionalities
- (d) All of the mentioned

1-j. Maintenance initiated by defects in the software is called:(CO5,K3)

- (a) Corrective Maintenance
- (b) Adaptive Maintenance
- (c) Perfective Maintenance
- (d) Preventive Maintenance
- 2. Attempt all parts:-

2.a.	Define the incremental model of software development.(CO1,K2)	2
2.b.	Explain IEEE standards for SRS.(CO2,K3)	2

2.c. Differentiate between Coupling and Cohesion.(CO3,K4)

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Nh

2.d.	Briefly discuss ISO standard.(CO4,K2)	2
2.e.	State the objective of software maintenance. (CO5,K2)	2
SECTIO	<u>N-B</u>	30
3. Answe	r any <u>five</u> of the following:-	
3-a.	List out all the advantages and dis-advantages of prototype model.(CO1,K2)	6
3-b.	Explain how an iterative model is different from a classical waterfall model. (CO1,K4)	6
3-с.	Compare Interviews and Brainstorming session as requirement elicitation techniques of a software. (CO2,K4)	6
3-d.	Discuss the importance of Use-case diagram. Draw a use case diagram for an online shopping system.(CO2,K4)	6
3.e.	Explain about the cardinality and modality with suitable example.(CO3,K2)	6
3.f.	Discuss structural testing. How is it different from functional testing.(CO4,K3)	6
3.g.	Describe steps involved in project scheduling process, project timeline chart and task network.(CO5,K4)	6
<u>SECTIO</u>	<u>N-C</u>	50
4. Answe	r any <u>one</u> of the following:-	
4-a.	Elaborate on how the use of software engineering principles helps to develop software products cost-effectively and timely. (CO1,K5)	10
4-b.	Explain briefly about the following (i) business process engineering (ii) product engineering.(CO1,K2)	10
5. Answe	r any <u>one</u> of the following:-	
5-a.	Design an E-R diagram for Hotel Management System with all possibile cardinality.(CO2,K3)	10
5-b.	Draw an ER and DFD diagram for university information System.(CO2,K2)	10
6. Answe	r any <u>one</u> of the following:-	
6-a.	Differentiate Generalization and Inheritance with example.(CO3,K3)	10
6-b.	Design and explain Class diagram for E-Library Management.(CO3,K2)	10
7. Answe	r any <u>one</u> of the following:-	
7-a.	Define all the black box testing techniques in detail.(CO4,K2)	10
7-b.	Discuss all the UML diagrams we use in Object-oriented design. Compare Activity diagram and Class diagram.(CO4,K3)	10
8. Answe	r any <u>one</u> of the following:-	
8-a.	Explain maintenance. Discuss its 4 types in detail. (CO5,K2)	10
8-b.	List out 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,K4)	10

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