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B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Third Semester

18AIC204T - SOFTWARE ENGINEERING PRINCIPLES

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks) — Answer **all** Questions

		Marks	BL	CO
1.	If you were a lead developer of a software company and you are asked to submit a project/product within a stipulated time-frame with no cost barriers, which model would you select? (A) Waterfall (B) Spiral (C) RAD (D) Incremental	1	2	1
2.	Identify the one that given below is does not account for software failure: (A) Growing Demand (B) Low anticipation (C) Expanding Supply (D) Less reliable and expensive	1	2	1
3.	Select the one that does not affect different types of software as a whole. (A) Heterogeneity (B) Flexibility (C) Business and social change (D) Security	1	1	1
4.	A generic process framework for software engineering encompasses five activities. They are (A) Communication, Planning, Modeling, Construction, Deployment (B) Contract, Planning, Testing, Construction, Deployment (C) Communication, Planning, Testing, Construction, Deployment (D) Contract, Planning, testing, Construction, Deployment	1	1	1
5.	Identify the functional requirement from the following: (A) Maintainability (B) Portability (C) Robustness (D) Software features	1	1	2
6.	Consider a smart home system where, a heat sensor detects an intrusion and alerts the security company. What kind of a requirement the system is providing? (A) Functional (B) Non-Functional (C) Known Requirement (D) Software requirement	1	1	2
7.	What kind of approach was introduced for elicitation and modelling to give a functional view of the system? (A) Object Oriented Design (B) Use Cases (C) Fusion (D) Object Modeling Technique	1	1	2
8.	Which P is not included in JAD? (A) Purpose (B) Principles (C) Pace (D) Process	1	1	2
9.	Which of the following is the best type of module coupling? (A) Control Coupling (B) Stamp Coupling (C) Data Coupling (D) Content Coupling	1	1	3

10. The rules-driven workflow, which is executed based on a _____ with rules that dictate its progress. 1 1 3
(A) State machine (B) Sequential workflow
(C) Process modeling (D) Domain Modeling

11. _____ is executed by the Quality assurance team to make sure that the product is developed according to customers' requirements. 1 1 3
(A) Validation (B) Verification
(C) Both testing (D) None

12. Which is not included in ER diagram? 1 1 3
(A) Entity (B) Responsibility
(C) Attribute (D) Error

13. The alteration of the software to match variations in the ever-changing environment, falls under which category of software maintenance? 1 1 4
(A) Corrective (B) Adaptive
(C) Perfective (D) Preventive

14. Identify the objective for formal technical reviews? 1 1 4
(A) Allow senior staff members to correct errors (B) Assess programmer productivity
(C) Determining who introduced an error into a program (D) Uncover errors in software work products

15. Bottom-up integration testing has it's major advantage(s) that 1 1 4
(A) Major decision points are tested early (B) No drivers need to be written
(C) No stubs need to be written (D) Regression testing is not required

16. Acceptance tests are normally conducted by : 1 1 4
(A) Developer (B) End users
(C) Test team (D) Systems engineers

17. Which of the following activities are not part of the software reengineering process model? 1 1 5
(A) Forward Engineering (B) Inventory analysis
(C) Prototyping (D) Reverse Engineering

18. Identify the model which is not suitable for accommodating any change? 1 1 5
(A) Build & Fix Model (B) Prototyping Model
(C) RAD Model (D) Waterfall Model

19. Agile Software Development is based on: 1 1 5
(A) Incremental Development (B) Iterative Development
(C) Both Incremental and Iterative Development (D) Linear Development

20. Choose the following statements regarding Build & Fix Model is wrong? 1 1 5
(A) No room for structured design (B) Code soon becomes unfixable & unchangeable
(C) Maintenance is practically not possible (D) It scales up well to large projects

PART - B (5 × 4 = 20 Marks) Marks BL CO
Answer **any 5** Questions

21. Narrate the traditional software development life cycle 4 4 1

22. A generic process framework for software engineering defines five framework activities. Illustrate them in your way? 4 2 1

23. Discuss the use case model and activity model for ATM banking 4 3 2

24.	Describe the importance of coupling in modularity. Explain its types with neat diagram.	4	2	3
25.	Differentiate verification and validation in your own words. Are both of these methods used in test case design?	4	4	4

26.	Control flow represents a program as a graph which consists of nodes and edges. How the code complexity of the program can be defined? Find the number of paths and calculate the complexity for the following:
	i=1;
	n=11; //n - Number of nodes present in graph
	
	while(i<n-1)
	do{
	j= i+1;
	}
	
	while(j<n)
	do{
	if a[i]<a[j] then
	swap(a[i],a[j]);
	}
	j=j+1;
		4	2	2

27.	As a product manager, how will you create a software product release plan. How do you release the product across teams? Mention the best release management system for software development	4	3	5

PART - C (5 × 12 = 60 Marks) — **Marks** **BL** **CO**

Answer **all** Questions

28.	(a) Consider you are a project manager of XYZ Company. You Followed SCRUM method for most of your projects. Illustrate the SCRUM process flow with proper diagram. **(OR)** (b) Assume that you are a software developer of a company. A client has approached you to for a better solution of the problem faced by their side. The client stated that risks/uncertainties will lead to loss if not properly planned and solve. Justify with a neat pictorial representation, which model will you opt for software development and mention its merits and demerits in detail.	12	1	1
29.	(a) For the following case, Draw the Entity relationship diagram. The owners of a small computer repair shop would like to keep track of the repair jobs for computers they repair, the items used for each repair job, the labour costs for each repair job, the repairmen performing each repair job, and the total cost of each repair job. When customers bring their computers in to be repaired, they make a deposit on the repair job and are given a date to return and uplift their computers. Repairmen then perform repairs on the customers' computers based on the repair job and detail the labour costs and the items used for each repair job. When customers return, they pay the total cost of the repair job less the deposit, collect a receipt for their payment, and uplift the repaired computer using this payment receipt. **(OR)** (b) Discuss and write the software requirement specification for Library management system with detailed template.	12	2	2

30.	(a) Student login to get the registration from and then choose the course available. Assign subject to staff and update the changes in subject. Registration database maintains student profile login name and address course registration information and maintained in the database and the database admin updates the new records. Draw the Use Case diagram for the above problem statement and explain it.	12	2	3
	(OR)			
	(b) Describe the details of different types of Architectural styles with neat diagrams.			
31.	(a) (I) Draw and explain the software construction characteristics. (6) (II) Differentiate Desk check, walkthrough, and code review. (6)	12	4	4
	(OR)			

	(b) For the Following code, Draw the flowchart, and flow graph. Find the Cyclomatic Complexity.
	IF A = 10 THEN
	IF B > C THEN
	A = B
	ELSE
	A = C
	ENDIF
	ENDIF
	Print A
	Print B
	Print C			

32.	(a) Write the Test Cases for the following Test Scenario: **Test Scenario 1:** Check the Login Functionality **Test Scenario 2:** Check the Search Functionality **Test Scenario 3:** Check the Product Description Page **Test Scenario 4:** Check the Payments Functionality **Test Scenario 5:** Check the Order History	12	3	5
	(OR)			
	(b) Elucidate any five laws of Lehman used to Software Maintenance for large systems.			

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