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Question Paper Code : 80504

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2025.

Sixth Semester

Computer Science and Engineering

CCS 356 – OBJECT ORIENTED SOFTWARE ENGINEERING

(Common to Computer Science and Engineering (Artificial Intelligence and Machine Learning)/Computer and Communication Engineering/Computer Science and Business Systems/Information Technology)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Define the XP concepts of refactoring.
2. Differentiate Incremental model and Spiral model.
3. Draw Use case diagram for ATM transactions.
4. List the components of a CASE tool.
5. Define Functional Independence.
6. Justify the following the statement;
“The design process should not suffer from tunnel vision”.
7. How can we perform regression testing?
8. List the advantages of Debugging in building software components.
9. Differentiate SCM and SPM.
10. Define DevOps.

PART B — ($5 \times 13 = 65$ marks)

11. (a) Suppose you have to develop software for a client with minimum risk involved in development. But the client is not in a position to define the detailed input and output requirements. In this situation which process model would be chosen? Justify your answer.

Or

- (b) Google is working on project to come up with a competing product for MS Word that provides all the features provided by MS Word and any other features requested by the marketing team. The final product needs to be ready in 10 months of time. Discuss how the process can be modeled using traditional and agile approaches. Compare them.
12. (a) Justify the need for Finite State Machines and Petrinets in requirement analysis phase. Discuss the same with example application.

Or

- (b) Develop a Context level, Level 1 and Level 2 Data Flow Diagram for online book store system:
- Consider an online book stores. It accepts individual / bulk orders, process payments, triggers delivery of the books. Some of the major features of the system include
- Order books
 - User friendly online shopping cart function
 - Create, view, modify and delete books to be sold
 - To store inventory and sales information in database
 - To provide an efficient inventory system
 - Register for book payment options
 - Request book delivery
 - Add a wish list
 - Place request for books not available.
 - To be able to print invoices to members and print a set of summary reports
 - Internet access
13. (a) Discuss about different Architectural styles followed in system design? And also discuss the relative merits and difficulties of applying Layered architecture in the following areas:
- (i) embedded microprocessor applications, (5)
 - (ii) computer graphics, (4)
 - (iii) operating system design. (4)

Or

- (b) What is the relationship between cohesion and coupling? Briefly describe the types of coupling and cohesion. (7)

Identify the type of coupling in the following. How can it overcome?

- (i) Part of program handles lookup for customer. When customer not found, component adds customer by directly modifying the contents of the data structure containing customer data. (3)
- (ii) The print routine of the customer billing accepts a customer data structure as an argument, parses it, and prints the name, address, and billing information. (3)
14. (a) Compare and contrast Black box testing and White box testing
Or

- (b) Consider the pseudo code for simple subtraction given below:

Program 'Simple Subtraction

Input (x, y)

Output (x)

Output (y)

If $x > y$ then DO

$x - y = z$

Else $y - x = z$

End If

Output (z)

Output "End Program"

Perform basis path testing and generate test cases.

15. (a) Consider the details of a project involving 11 activities.

Activity	Predecessor(s)	Duration in Months		
		Optimistic	Most likely	Pessimistic
A	—	6	7	8
B	—	1	2	9
C	—	1	4	7
D	A	1	2	3
E	A, B	1	2	9
F	C	1	5	9
G	C	2	2	8
H	E, F	4	4	4
I	E, F	4	4	10
J	D, H	2	5	14
K	I, G	2	2	8

Construct the project network and also find the critical path for the network

Or

- (b) Illustrate DevOps Architecture and functionalities with neat diagram.

PART C — (1 × 15 = 15 marks)

16. (a) Consider a ticket vending machine in a bus / train. The machine must scan and authenticate the currency paid, calculate fare, issue the ticket. This must be done quickly with a response time of 1 minute. The first version of the software is implemented. The following are the problems in the system

- Use of double precision numbers increases the response time.
- Slower image processing algorithm to recognize the currency.
- After the problems are identified, the project is behind schedule and over budget. So design is modified, to reduce cost and to improve accuracy. Then the product is sold to two vending machine companies who defray about one third of the cost overrun.
- After a few years, the sensors in the machine become obsolete. Changing them means changing the software also. The project is 6 months behind schedule and 25% overbudget. But everybody feel that the new system is more reliable and is of a higher quality.

Illustrate type of process model will you prefer in this situation?

Or

- (b) Consider the following scenario:

A customer visits the online shopping portal. A customer may buy item or just visit the page and logout. The customer can select a segment, then a category, and brand to get the different products in the desired brand. The customer can select the product for purchasing. The process can be repeated for more items. Once the customer finishes selecting the product(s) the cart can be viewed, if the customer wants to edit the final cart it can be done here. For final payment the customer has to login the portal, if the customer is visiting for the first time he must register with the site, else the customer must use the login page to proceed. Final cart is submitted for payment and card details and address (where shipment has to be made) are confirmed by the customer. Customer is confirmed with a shipment Id and delivery of goods within 15 days. — Draw Activity and sequence diagram for the given scenario.