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R. V. COLLEGE OF ENGINEERING

Autonomous Institution affiliated to VTU

V Semester B. E. Examinations August 2022

Computer Science and Engineering

OBJECT ORIENTED ANALYSIS & DESIGN (Elective)

Time: 03 Hours ***Maximum Marks: 100***

Instructions to candidates:

1. Answer all questions from Part A. Part A questions should be answered in the first three pages of the answer book only.
2. Answer FIVE full questions from Part B.

PART A

1	1.1	Identify any two attributes and two operations for University class	02
	1.2	Object behavior is represented by _____.	01
	1.3	Mention the type of relationship between Pilot can fly Planes.	01
	1.4	List the four phases of Object-Oriented development life cycle.	02
	1.5	Name the basic unit of decomposition in object-oriented decomposition.	01
	1.6	You will find- (minus signs), + (plus signs) infront of operation names and attributes in UML class diagrams. What do they represent?	02
	1.7	Denote using UML notations the aggregation feature between the class-Car class and Engine class.	02
	1.8	What is the main focus of analysis phase in software development process?	01
	1.9	Identify the inheritance relationship among the classes given below and draw the inheritance diagram for the same using UML notations. Shape, Rectangle, Circle Polygon, Square.	02
	1.10	State the independence axiom and the information axiom w.r.t. object-oriented design.	02
	1.11	Represent the following relation among classes using UML notations. Bill contains number of items. Each item contains number of commodity. The commodity has unit price and total price.	02
	1.12	List two advantages of prototyping.	02

PART B

2	a	Differentiate between Algorithmic decomposition and Object-oriented decomposition.	10
	b	Differentiate between Encapsulation, Information Hiding and Polymorphism with suitable examples.	06
		OR	
3	a	Describe the five major activities of object-oriented system development.	10
	b	Briefly explain the procedure for building a high quality software.	06

4	a	Explain the following terms with example: i. Generalization/ Specialization ii. Association iii. Aggregation	06
	b	Design a use case diagram for a student enrolling a course at a University.	10
		OR	
5	a	Create a sequence diagram for the following scenario. A customer wants to draw money from his bank account. He enters his card into an ATM (Automated Teller Machine). The ATM machine prompts "ENTER PIN". The customer enters his pin. The ATM (internally) retrieves the bank account number from the card. The ATM encrypts the PIN and the account number and sends it over to the bank. The bank verifies the encrypted Account and PIN number. If the PIN number is correct, the ATM displays "Enter amount", draws money from the bank account and pays out the amount.	10
	b	Draw the inheritance relationship using UML notations among the classes given below: Security, Cash Account, Stock, Bond, Property SmallCapStock, LargeCapStock	06
6	a	Explain the Noun phrase method and the problems associated with this approach for choosing classes from the problem definition.	08
	b	Mention the guidelines for defining class and attributes with examples.	08
		OR	
7	a	List the guidelines for identifying Generalization/ Specialization and a-part-of relationship feature from the problem definition.	10
	b	Discuss the procedure for identifying Associations from the problem definition. List the guidelines for identifying Association.	06
8	a	What are the risks of a cut-and-paste type of reusability? List some reasons.	06
	b	Describe the major activities of Object Oriented Design process.	10
		OR	
9	a	Describe three basic types of attributes with examples. Mention the UML representation for attribute.	06
	b	Describe the problems associated with Multiple Inheritance and how can it be avoided. List some of the characteristics of a bad design.	10
10	a	What is Pattern? Explain with an example. Explain the three main categories of Patterns.	08
	b	Describe about the Whole-Part design pattern with an example.	08
		OR	
11	a	Mention any six mechanism/ properties of patterns that help to build efficient software architecture.	06
	b	Explain how master slave pattern supports fault tolerance, parallel computation and computational accuracy.	10