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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Second Semester, Master of Computer Applications (MCA)

Semester End Examination; October - 2023

Object-Oriented Modelling and Design Patterns

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Understand the fundamentals of object oriented concepts.

CO2: Illustrate the importance of object oriented modelling and object oriented system is developed based on unified modelling language (UML).

CO3: Design class diagram, state diagram and interaction diagram for the real time problems.

CO4: Apply the properties and functions of system design and class design.

CO5: Discuss standard suitable patterns for the particular problems.

Note: I) *Answer any* ***FIVE*** *full questions, selecting* ***ONE*** *full question from each unit.*

II) *Any* ***THREE*** *units will have internal choice and remaining* ***TWO*** *unit questions are compulsory.*

III) *Each unit carries 20 marks.*

Q. No.	Questions	Marks	BLs	COs	POs
	UNIT - I	**20**			
1 a.	Define the following terms with example and UML notation: i) Multiplicity ii) Qualified Association iii) Association Classes iv) Links and Associations	12	L1	CO1	PO1,2,3,5
b.	What is aggregation and composition? Give their respective UML notation with an example.	8	L2	CO1	PO1,2,3,5
	UNIT - II	**20**			
2 a.	Define Event and explain the three types of events with example.	10	L2	CO2	PO1,2,3,4,5
b.	Justify the need for nested state diagrams. With help of an example, explain how nested state diagram can be represented in UML?	10	L5	CO2	PO1,2,3,4,5
	UNIT - III	**20**			
3 a.	Outline three Use Case relationships. Design the Use Case diagram with two relationships for Stock Brokerage System.	10	L2,6	CO3	PO1,2,3,4,5
b.	Explain well defined stages of software development stages.	10	L2	CO3	PO1,2,3,4,5
	OR				
d.	Extend with neat diagram, Iterative Development Life Cycle.	10	L2	CO3	PO1,2,3,4,5
e.	Illustrate the questions to be answered for a good System Concept.	10	L2	CO3	PO1,2,3,4,5

Contd….2

	UNIT - IV	**20**			
4 a.	List and explain creating reusable new things in System Design.	10	L2	CO4	PO1,2,3,4,5
b.	List and discuss the External software control strategy.	10	L1,6	CO4	PO1,2,3,4,5
	OR				
d.	Explain with neat diagram, Combining layers and Partitions in System Design.	10	L2	CO4	PO1,2,3,4,5
e.	Outline the Batch Transformation and Continuous Transformation of Architectural styles of System Design.	10	L2	CO4	PO1,2,3,4,5
	UNIT - V	**20**			
5 a.	What is pattern? Discuss the Categories Architectural pattern, Design Pattern, Idioms in detail.	10	L1,6	CO5	PO1,2,3,4,5
b.	Elaborate with diagram Forwarder-Receiver pattern.	10	L6	CO5	PO1,2,3,5
	OR				
d.	Discuss the Concept of Architectural Pattern.	10	L6	CO5	PO1,2,3,4,5
e.	Explain with neat diagram Client-Dispatcher-Server Design Pattern.	10	L2	CO5	PO1,2,3,4,5

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