Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Science

End Sem (Odd) Examination Dec-2022

CA3EL07 Object Oriented Analysis & Design

Programme: BCA, BCA-MCA(Integrated) Branch/Specialisation: Computer Application

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. The Unified Modelling Language (UML) has become an effective standard for software modelling. How many different notations does it have? **1**

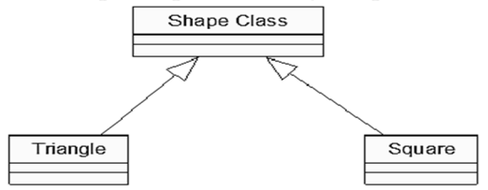
(a) Three (b) Four (c) Six (d) Nine

ii. Which model in system modelling depicts the static nature of the system? **1**

(a) Data model (b) Structural model

(c) Behavioural model (d) Context model

iii. What type of relationship is represented by shape class and square? **1**



(a) Generalization (b) Realization

(c) Aggregation (d) Dependency

iv. At Conceptual level Class diagrams should include- **1**

(a) Operations only (b) Attributes only

(c) Both (a) and (b) (d) None of these

v. What is an abstract class? **1**

(a) A class that has direct instances, but whose descendants may have direct instances

(b) A class that has direct instances, but whose descendants may not have direct instances

(c) A class that has no direct instances, but whose descendants may have direct instances

(d) All of these

P.T.O.

vi. Which of the following are the valid relationships in Use Case Diagrams? **1**
(a) Generalization (b) Include (c) Extend (d) All of these

vii. The UML supports event-based modelling using _____ diagrams. **1**
(a) Deployment (b) Collaboration
(c) State chart (d) All of these

viii. Coupling is a qualitative indication of the degree to which a module- **1**
(a) Can be written more compactly
(b) Focuses on just one thing
(c) Is able to complete its function in a timely manner
(d) Is connected to other modules and the outside world

ix. The user system requirements of library management system are captured through which document? **1**
(a) SDD (b) SRS (c) DDD (d) SRD

x. Which of the following is carried out for the detailed design process? **1**
(a) Both SRS and SAD are taken as input for the detailed design stage
(b) Design alternatives are evaluated first and then Design is finalized
(c) Detailed design is the output for the process
(d) All of these

Q.2 i. What is UML? **2**

ii. Differentiate among structural and dynamic view of the system. Define with example. **3**

iii. Explain the feature of object-oriented analysis. **5**

OR iv. Explain the feature of object-oriented design. **5**

Q.3 i. Define association through the object model. **3**

ii. Define aggregation and composition. Using proper example bring out difference between the two. Mention different symbols used for aggregation & composition. **7**

OR iii. Identify different vocabulary of library management system. Using these terms identify different classes, their data members & operations of library management system. **7**

Q.4 i. What is a Use Case Diagram? Define the term extend and include in use case diagram. **3**

ii. What is an activity diagram? Explain the terminology used in activity diagram i.e., Initial node, activity final node, decision node, fork node, merge node, swimlane bar, activity, action, control flow etc. **7**

OR iii. What is state diagram? Draw state transition diagram to purchasing a product from online shopping system. Explain the term state, transition, event and guard condition with respect to state transition diagram. **7**

Q.5 i. How do you get better help in class and object design through factory and singleton pattern? Explain it. **4**

ii. What do you mean by GoF design pattern? Differentiate among creational and structural patterns. **6**

OR iii. What do you mean by cohesion and coupling in module integration? What condition is justifiable in module integration w.r.t. cohesion and coupling? **6**

Q.6 Attempt any two:

i. Design a sequence diagram for library management system using suitable terminology of sequence diagram. **5**

ii. Design a class diagram for ATM Machine. Whenever required use appropriate aggregation, generalization and specialization concept. **5**

iii. Design an activity diagram for traffic management system with use of suitable terminology of activity diagram. **5**

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Marking Scheme
CA3EL07 Object Oriented Analysis & Design

Q.1	i)	d) Nine	**1**
	ii)	b) Structural Model	**1**
	iii)	a) Generalization	**1**
	iv)	b) attributes only	**1**
	v)	c) A class that has no direct instances, but whose descendants may have direct instances	**1**
	vi)	d) All of the mentioned	**1**
	vii)	c) State chart	**1**
	viii)	d) is connected to other modules and the outside world	**1**
	ix)	b) SRS	**1**
	x)	d) All of the mentioned	**1**
Q.2	i.	Definition of UML…… 2 marks	**2**
	ii.	Two difference b/w Structural and Dynamic ……2 marks One mark for each example ……...1 mark	**3**
	iii.	At least five features……1 marks for each	**5**
OR	iv.	At least five features……1 marks for each	**5**
Q.3	i.	Define Association ……...2 marks Design the object model……...1 mark	**3**
	ii.	Define aggregation and composition……1 mark for each Using proper example bring out difference between the two……1 mark for each Mention different symbols used for aggregation & composition……...1.5 mark for each	**7**
OR	iii.	Identify different vocabulary of library management system……..2 marks Using these terms identify different classes, their data members & operations of library management system…….5 marks for complete diagram.	**7**
Q.4	i.	Definition of Use Case Diagram…….1 marks Define the term extend and include in use case diagram …….1 mark for each.	**3**
	ii.	Definition of Activity Diagram……. 2 marks Explain the terminology used in Activity diagram i.e., Initial node, activity final node, decision node, fork node, merge node, Swimlane bar, activity, action, control flow etc……5 marks	**7**
OR	iii.	Definition of State diagram…….2 mark Draw State transition diagram to purchasing a product from online shopping system…….3 mark Explain the term state, transition, event and guard condition with respect to state transition diagram……2 mark	**7**
Q.5	i.	How do you get better help in class and object design through factory and singleton pattern……...1 mark for each reason?	**4**
	ii.	What do you mean by GoF design pattern…….3 mark? Differentiate among Creational and Structural patterns…….……1 mark for each difference.	**6**
OR	iii.	What do you mean by Cohesion and Coupling in Module integration…….4 marks? What condition is justifiable in module integration w.r.t. cohesion and coupling…….2 mark	**6**
Q.6		Attempt any two:	
	i.	Design a complete Sequence Diagram for Library Management System ……...5 mark	**5**
	ii.	Design a complete Class diagram for ATM Machine. …...5 mark	**5**
	iii.	Design an Activity diagram for Traffic Management System …….5 mark.	**5**

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