Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering
End Sem Examination May-2023
CS3CO15 / IT3CO14
Object Oriented Analysis & Design

Programme: B.Tech. Branch/Specialisation: CSE/IT

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. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Which of the following is not a characteristic of object? **1**
(a) State (b) Behaviour (c) Action (d) Identity

ii. _____ fully depends on the perspective of the user. **1**
(a) Inheritance (b) Abstraction
(c) Modularity (d) All of these

iii. 'Car has an engine' refers to which relationship- **1**
(a) Composition (b) Dependency
(c) Realization (d) None of these

iv. The model that shows the way different object communicates- **1**
(a) Structural (b) Communication
(c) Interaction (d) Abstract

v. Which of the following diagram models the dynamic nature of the system? **1**
(a) State chart (b) Class (c) Package (d) Use case

vi. Collaboration diagram is- **1**
(a) Structural diagram (b) Behavioural diagram
(c) Interaction diagram (d) None of these

vii. Design pattern is- **1**
(a) Problem solution pair (b) Reuse of detailed code
(c) Complete implementation (d) All of these

viii. Combination of package and class is called as- **1**
(a) System (b) Interface (c) Subsystem (d) Deployment

ix. Class testing in object oriented testing is equivalent to- **1**
(a) Unit testing (b) System testing
(c) Regression testing (d) None of these

P.T.O.

x. Reverse engineering is- **1**
(a) Back engineering (b) Corresponds to deconstruction
(c) Leads to design elements (d) All of these

Q.2 i. Software is inherently complex; the complexity of software systems often exceeds the human intellectual capacity. Justify it. **3**

ii. Explain various fundamental concepts of object orientation. **7**

OR iii. What is Rational Unified Process (RUP)? Explain by diagram the concept of Phase, Iteration, Artifact, Worker, Activity and Workflow in RUP. **7**

Q.3 i. What is use case model? List its benefits. **3**

ii. Categorize the following relationship into generalization, aggregation, composition and association. Explain the reason behind the mentioned relationship. Draw UML Notations for each type. **7**
(a) A drawing object is a geometrical object or group or text.
(b) Modems and keyboards are input/output devices.
(c) Car has an accelerator, a break and multiple wheels.
(d) Bank account is either type savings or type current.

OR iii. List the broad categories in which UML diagram can be classified. Also, provide the diagrams that fall under each category. **7**

Q.4 i. Draw state chart diagram for the coffee vending machine. **4**

ii. Describe activity view diagram with the help of suitable example. **6**

OR iii. Correlate sequence diagram and collaboration diagram. **6**

Q.5 i. Write the algorithm for the concept of 'Singleton pattern'. **4**

ii. Describe various constructs using which the software can have sound architectural base. **6**

OR iii. What is a package? List various package dependencies. **6**

Q.6 Attempt any two:

i. Why is reusability important? How does Object-Oriented software development achieve and improve reusability? **5**

ii. Explain important characteristics of object oriented testing. **5**

iii. What is reverse engineering. In which situations it can be utilized in software industry. **5**

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Scheme of Paper

Q.1 (i)
(c) Action

(ii)
(c) Modularity

(iii)
(a) composition

(iv)
(b) communication

(v)
(d) State chart

(vi)
(b) Behavioural diagram (c) Interaction diagram

(vii)
(d) all of these

(viii)
(c) Subsystem

(ix)
(a) Unit testing

(x)
~~(a) Back Engineering~~ (d) All of these

Q.2 (i) Justification — 3 Marks
(ii) Each Fundamental concept — 1 marks
OR
(iii) Explanation - 2 marks

Q.3 (i) Explanation — 1 mark
Benifits — 2 marks

(ii) 1.75 for each point / Relationship

OR

(iii) Explanation of UML diagrams — 7 marks

Q.4 (i) diagram and Explanation [each 2 marks)

(ii) discription — 3 marks
Example / diagram — 3 marks

OR

(iii) Explanation with correlation 6 marks

Q.5 (i) Algorithm — 4 marks

(ii) Explanation — 6 marks

OR

(iii) Package — 3 marks
Package dependancies — 3 marks

Q.6

(i) Impartance — 2 marks
achieve and improve reusability — 3 marks

(ii) each characteristics — 1 mark

(iii) Explanation Reverse Engg. — 2 marks
Applications — 3 marks