**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **2BC3107** | Roll No. | Total Printed Pages: 2 |
| **2BC3107** |  |
| BCA II Year III-Semester (Back) End Semester Examination, November 2021  **(All Spl.)** | |
| **BCA03103 / BAP03103 / BCT03103 / BCM03103 : Object Oriented Analysis & Design** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2. ------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | (i)Describe an outline of object-oriented analysis and object-oriented design.  (ii)Why has the unified process emerged as a popular and effective software development process? | **(6)** | Remembering & understanding |
|  |  |  |  |  |
|  | **(b)** | Elucidate some advantages of appropriately organizing the OOAD artifacts. | **(6)** | Analysing |
|  |  | **OR** |  |  |
| **Q.2** | **(a)** | Contrast the following:   1. Actors Vs. Stakeholders 2. Use case Vs. Algorithm | **(6)** | Analysing |
|  |  |  |  |  |
|  | **(b)** | Consider a computer-based system that plays chess with a user. Which UML diagrams would be helpful in designing the system? | **(6)** | Evaluating |
|  |  | **UNIT-II (CO2)** |  |  |
| **Q.3** | **(a)** | Justify the statement: “Abstraction and encapsulation are complementary concepts; Abstraction, encapsulation and modularity are synergistic concepts” | **(6)** | Understanding |
|  |  |  |  |  |
|  | **(b)** | Model the relationship between a car (that has an engine and a colour) and its owners (having a name) in a UML class diagram. A car can have several owners over time, but only one or none owner at a time. Do not forget cardinalities, role names, attributes, and their types. | **(6)** | Analysing & applying |
|  |  | **OR** |  |  |
| **Q.4** | **(a)** | 1. Describe the purpose to have a variety of diagrams in a model of a system. 2. State which UML diagrams give a static view, and which give a dynamic view of a system. | **(6)** | Evaluating |
|  |  |  |  |  |
|  | **(b)** | **Categorize** the following relationship into generalization, aggregation, composition, and association.   1. Files contain records. 2. A drawing object is text, a geometrical object or group. 3. Modems and keyboards are input/output devices. 4. Object classes may have several attributes. 5. Car has accelerator, break and wheels as parts. 6. Windows is composed of lot of frames. 7. An account is either type savings or type current. | **(6)** | Analysing & evaluating |
|  |  | **UNIT-III (CO3)** |  |  |
| **Q.5** | **(a)** | 1. Define and list out contents of class diagram. 2. Creating new classes called ‘lamp’, ‘bulb’ and ‘switch’ in the logical view browser with the help of the relationships in UML. Explain any UML’s Structural Diagram briefly. | **(6)** | Evaluating |
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|  | **(b)** | Define an Object. Illustrate the probable attributes that will be modelled in a library database for the object BOOK. | **(6)** | Applying |
|  |  | OR |  |  |
| **Q.6** | **(a)** | Outline and formulate the purpose of Interaction Diagram. | **(6)** | Analyzing |
|  |  |  |  |  |
|  | **(b)** | Compare Activity and state chart diagram. Mention the Elements of an Activity Diagram. | **(6)** | Evaluating |
|  |  | **UNIT-IV (CO4)** |  |  |
| **Q.7** | **(a)** | Discover the major difference between Component and Deployment Diagram. | **(6)** | Evaluating |
|  |  |  |  |  |
|  | **(b)** | Consider the following use Cases that play a role in the Banking System you have modelled:  1. Deposit  2.Withdraw  Model sequence diagrams for the above two use cases. | **(6)** | Applying |
|  |  | **OR** |  |  |
| **Q.8** | **(a)** | Write a problem statement for Library Management System. Design the UML Use Case diagram, Activity diagram, Class diagram, Sequence diagram, State chart diagram, Package diagram, and Component and Deployment diagram. | **(6)** | Analyzing & Applying |
|  |  |  |  |  |
|  | **(b)** | In an activity diagram, distinguish between the following:  (a)Decision node and fork  (b)Merge node and join | **(6)** | Analyzing & Evaluating |
|  |  | **UNIT V (CO5)** |  |  |
| **Q.9** | **(a)** | A University conducts examinations and the results are announced. Prepare a report for the following:  • Print the marks in the register number order semester wise for each department  • Print the Arrear list semester wise.  • Prepare a Rank list for each department.  • Prepare the final aggregate mark list for final year students.  Identify the problem statement, Design and Explain the classes for each sequence. Draw a detailed flow chart using state chart diagrams. | **(6)** | Applying |
|  |  |  |  |  |
|  | **(b)** | Write short notes on   1. Booch Methodology and 2. Shalear/Mellor’s Approach | **(6)** | Understand and remembering |
|  |  | **OR** |  |  |
| **Q.10** | **(a)** | **Sketch** the use case diagram for modeling a hospital information system aimed at collecting and storing complete information pertaining to the patient’s treatment history and disease behaviour where actors could be doctor, lab technician, patient, duty nurse, receptionist, visitors etc | **(6)** | Applying |
|  |  |  |  |  |
|  | **(b)** | Distinguish the below the terminologies based on the software testing.  (i) System Testing Vs Integration Testing  (ii) black box Testing Vs White box testing  (iii)Alpha Vs Beta Testing | **(6)** | Understand and remembering |