

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

Course: Object-Oriented Analysis and Design
Program: BCA
Course Code: CSBC 1013

Semester : II
Time : 03 hrs.
Max. Marks: 100

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1.	Why is modelling required? How UML helps in modelling?	2*2	CO1
Q 2.	Define following terms with symbols: i. Entry Activity ii. Include Relationship iii. Active Class iv. Node	4*1	CO1
Q 3.	Draw the suitable short UML diagram for each following sentence: a) Operation System is Windows or Linux. b) Bluetooth connects laptops and Tab. c) Room has a door and windows. d) Car has a engine, four tyres and 1 optional extra tyre.	4*1	CO1
Q 4.	Describe the Signal Class and explain detail with an example diagram.	4*1	CO4
Q 5.	How are nodes different from components? List out two examples of components and nodes each.	2*2	CO5

SECTION B
(4Qx10M= 40 Marks)

Q 6.	Assume a suitable scenario and design a Use Case Diagram for a restaurant application such as Zomato, Swiggy etc. <p style="text-align: center;">OR</p> Describe different types of “things” in conceptual model of UML.	10	CO2
Q 7.	Create an Activity diagram for following scenario: When customer requests a room, the hotel employee looks for room availability, then he insert customer’s data and verifies if the provided credit card number has enough credit to pay the room: in this case the booking is confirmed and we wait customer arrival. The Hotel information system allows customer to modify or cancel his/her reservation. If customer arrives he uses the room and then he	10	CO3

	pays, in case of no-show a penalty is accounted on his credit card and the booking is canceled.		
Q 8.	Draw the UML Sequence Diagram for ATM Machine (must include Client, ATM Machine, Controller as objects/actors/participants).	10	CO3
Q 9.	Design a Component diagram for “Hospital Management System”.	10	CO5
SECTION-C (2Qx20M=40 Marks)			
Q 10.	<p>a) Draw a class diagram for the following scenario: A castle has many rooms, corridors, stairs, towers, dungeons, and floors. Each tower and dungeon also has a floor. The castle is built from multiple stones each of which has dimensions, weight, color, and a composition material. The castle may be surrounded by a moat. Each lord lives in a castle; a castle may be without a lord if he has been captured in battle or killed. Each lady lives in a castle with her lord. A castle may be haunted by multiple ghosts, some of which have hostile intentions.</p> <p>b) Design Object Diagram for the given undirected graph. Each vertex and edge has a name, as shown below.</p>	2*10	CO2
Q 11	<p>Explain different types of events in the state diagram with at least three suitable examples for each.</p> <p style="text-align: center;">OR</p> <p>Discuss the following concepts in state diagram with suitable examples:</p> <ol style="list-style-type: none"> i. Aggeragation Concurrency ii. Transitions, Guard Conditions and their relationship. 	2*10	CO4