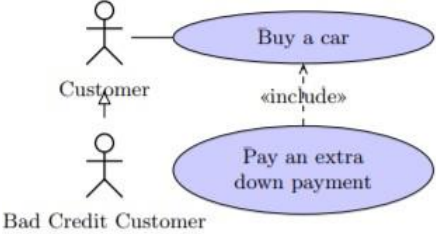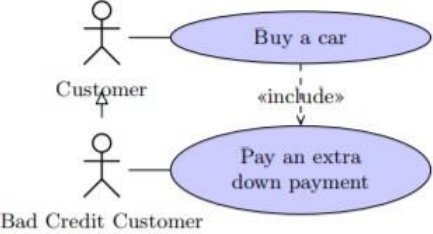| Name: Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2023

Course: BCA	**Semester : 2**
Program: Object Oriented Analysis and Design	**Time : 03 hrs.**
Course Code: CSBC1013	**Max. Marks: 100**

Instructions: Attempt all questions

SECTION A
(5Qx4M=20Marks)

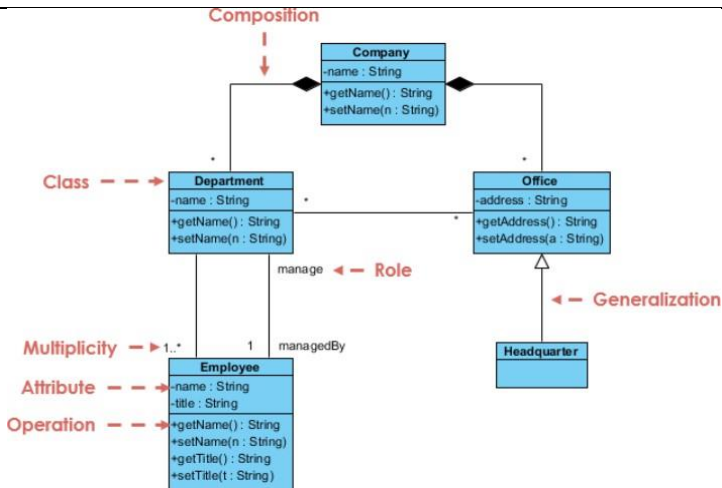| S. No.		Marks	CO
Q 1	Read the following description. "Customers of the garage can buy cars. Customers with a bad credit should pay an extra down payment". Which of the following diagrams represent this description? 	4	CO1
Q2.	Identify the incorrect statement(s) for above class diagram: a) A company consists of departments b) Departments are located in one or more offices. c) One office acts as a headquarter d) Each department has a manager who is recruited from the set of employees e) Headquarter class can't exist without Company class f) "manage" is a stereotype	4	CO2

Composition ↓
Company
-name : String
+getName() : String
+setName(n : String)

Class — — →
Department
-name : String
+getName() : String
+setName(n : String)

Office
-address : String
+getAddress() : String
+setAddress(a : String)

manage ◄— **Role**

◄— **Generalization**

Multiplicity —►1..*   1   managedBy

Headquarter

Employee
-name : String
-title : String
Attribute — — →-name : String
-title : String
Operation — — →+getName() : String
+setName(n : String)
+getTitle() : String
+setTitle(t : String)

Q3
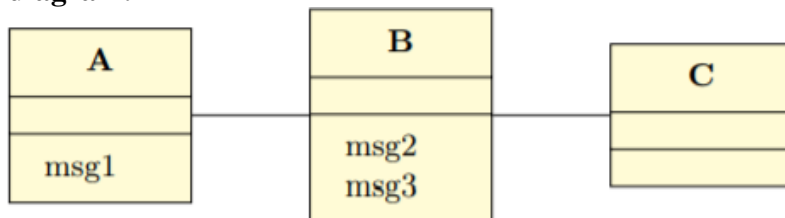
Consider the following sequence diagram.
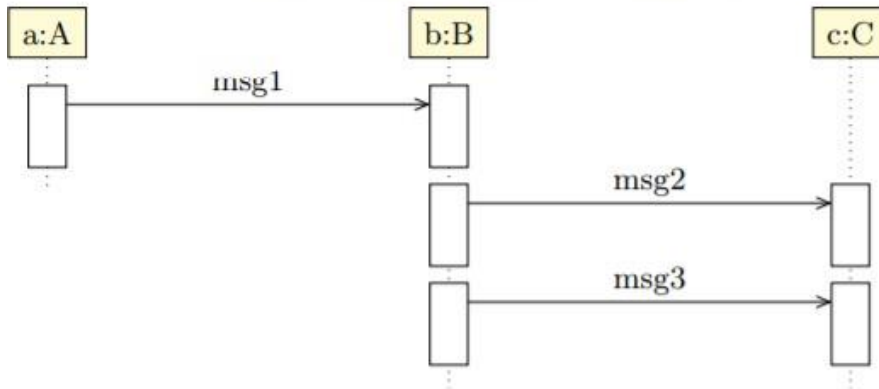
Identify the incorrect statements:
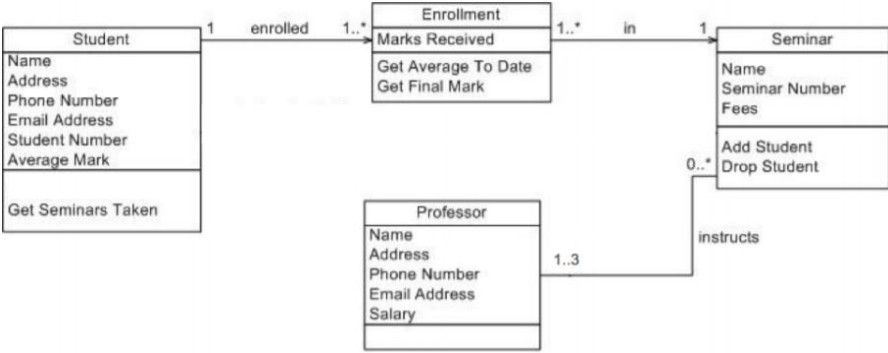**Statement 1: The class diagram below is consistent with the sequence diagram**
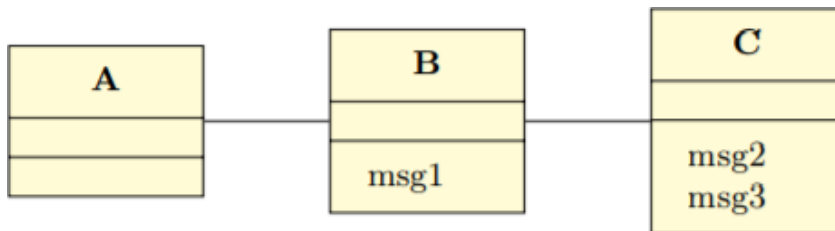
Statement 2: The class diagram below is consistent with the sequence diagram.

Statement 3: Message msg2 is received before msg3 has been sent.

4   CO3

	Statement 4: Message msg2 is sent after msg1 has been received.		
Q4	On February 21, 2014 user Ettozyame has asked the following question on the popular Q&A site StackOverflow: "I want to know in detail about the difference between alt and opt fragment in sequence diagram, they seem similar, I can't distinguish them. Anyone knows about this thing?" Which of the following statements are correct? **Statement 1:** alt is used to described alternative scenarios. Only one of the options will be executed. opt is used to describe an optional step. **Statement 2:** alt is more used for several choices, like a switch, while with opt code will be executed or not. **Statement 3:** an opt fragment cannot be enclosed in other combined fragments such as strict or par, while alt can be enclosed in such fragments. **Statement 4:** an alt fragment cannot be enclosed in other combined fragments such as strict or par, while opt can be enclosed in such fragments.	**4**	**CO4**
Q5	Identify the correct statements: a)Student is the parent class for Enrollment & enrollment is a parent class for Seminar b)A Student can have no enrollment at all c)A Student can participate in more than 1 Seminar d)It is compulsory for a Professor to instruct a Seminar e) none 	**4**	**CO5**
	SECTION B **(4Qx10M= 40 Marks)**		
Q6	a) Define Aggregation and Composition. b) What is the use of System sequence diagram? c) Briefly explain the different phases of Unified Process.	**10**	**CO3**
Q7	"RUP is not considered particularly agile". Elaborate and justify.	**10**	**CO2**
Q8	a) Explain the use of a component diagram. b) What do you understand by Event, State and Transition?	**10**	**CO4, CO5**

Q9	Describe Collaboration or Deployment diagram with an example.	10	CO1

<div align="center">

SECTION-C
(2Qx20M=40 Marks)

</div>

Q10	a) What is the relationship between sequence diagrams and use cases? Take an example to show the relationship, highlighting the advantages. b) For an atm system, every user has to be validated with a PIN number to make a transaction. A customer is allowed three times to validate card giving the correct PIN number. Show the representation for the same elaborate the 'validate user' use case using a sequence diagram	20	CO4, CO5
Q11	Draw the Activity diagram for following specification: A coffee vending machine dispenses coffee to customers. Customers order coffee by selecting a recipe from a set of recipes. Customers pay for the coffee using coins. Change is given back, if any, to the customers. The "Service staff" loads ingredients (coffee powder, sugar, milk, water, chocolate) into the coffee machine. The "Service staff" can also add a recipe by indicating the name of the coffee, the units of coffee powder, milk, sugar, water and chocolate to be added as well as the cost of the coffee. OR Prepare a USE CASE diagram for any Smart Irrigation System.	20	CO2