



PAN AFRICA CHRISTIAN UNIVERSITY

BACHELOR OF SCIENCE INFORMATION TECHNOLOGY AND BACHELOR OF BUSINESS INFORMATION TECHNOLOGY

END OF SEMESTER EXAMINATION

DEPARTMENT: COMPUTING AND INFORMATION TECHNOLOGY
COURSE CODE: BSIT300 / BIT300
COURSE TITLE: OBJECT ORIENTED ANALYSIS AND DESIGN
CAMPUS: ROYSAMBU
EXAM DATE: XXXXX XXXXX/APRIL,2024
TIME: XXXXX

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Three questions in Section **B**.
- Write only your **student number** on the answer booklet provided.

SECTION A (Answer ALL questions in this section)

Question 1:

a) Explain the meaning of the following sentences in the context of the Unified Process: "Construction builds the system in a series of iterations. Each iteration is a project in itself".

[2 Marks]

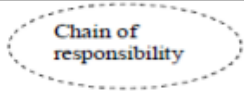
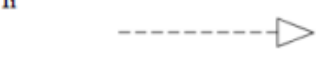
b) Identify the UML diagrams used for the following: **[3**

Marks]

- i. Modelling the behaviour of an object
- ii. Modelling interaction between groups of objects
- iii. Representing the functional behaviour of a system

c) The table below shows the building blocks of the Unified Modeling Language (UML). Study the diagrams and name each of them.

[2 Marks]

Building blocks of UML	
Diagram	Name
	Colaborations
	
	

d) Using a class diagram, illustrate a class known as a customer with the following attributes and operations.

Attributes: Public name, private customer -ID, and protected payment -mode.

Operations: Place order, pay for orders. **[3**

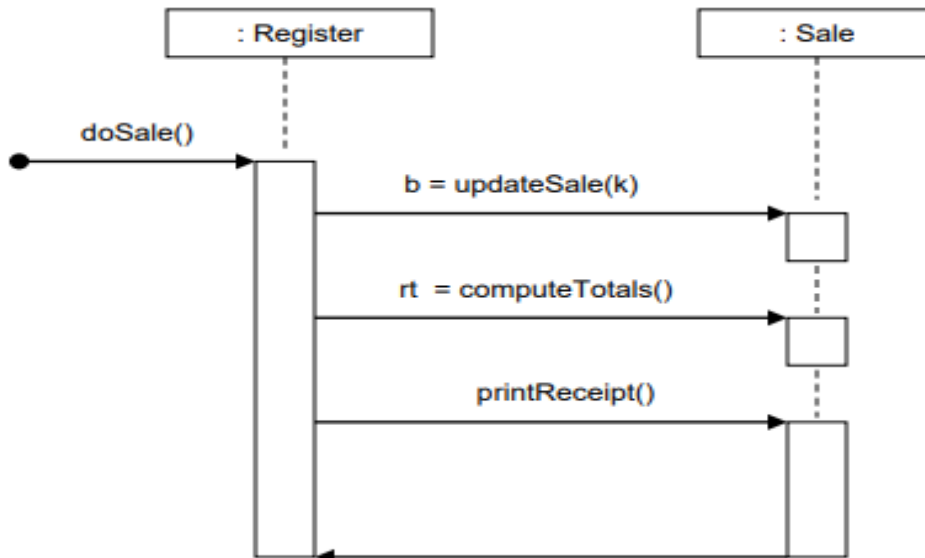
Marks]

SECTION B

(Answer any THREE (3) questions in this section)

Question 2:

a) Examine the following sequence diagram and answer the questions that follow:



i) Identify the lifeline. **[2**

Marks]

ii) Explain what is happening in the sequence diagram above. **[4**

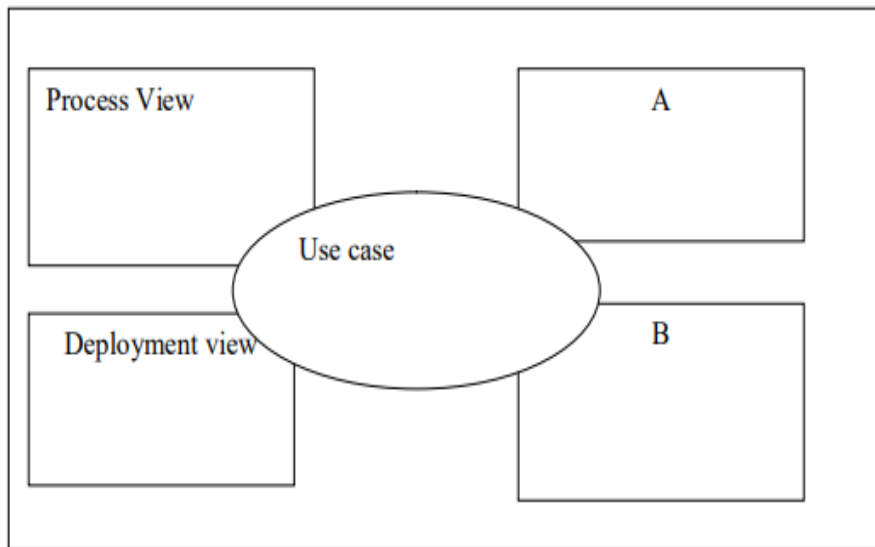
Marks]

b) A client has approached you to develop a program for his startup company. As a programmer you choose to use object oriented approach. Outline four reasons why you choose object oriented approach. **[4**

Marks]

Question 3:

a) The diagram below shows the views of system's Architecture Model. Study it and answer the questions that follow.



- i. Identify the views.

[2

Marks]

A.....

B.....

- ii. Explain the view that addresses system topology and delivery.

[2

Marks]

b) Draw an activity diagram of a scenario where an activity is started by a commuter actor who needs to buy a ticket. The vending machine will then request trip information from the commuter. Based on the information provided, the machine will calculate the payment due and request payment options. After payment is complete, the ticket is dispensed to the commuter.

[6 Marks]

Question 4:

a) To give an exam, an instructor first notifies the students of the exam date and the material to be covered. She then prepares the exam paper (with sample solutions), gets it copied to produce enough copies for the class, and hands it out to students on the designated time and location. The students write their answers to exam questions and hand in their papers to the instructor. The instructor then gives the

exam papers to the TAs, along with sample solutions to each question, and gets them to mark it. She then records all marks and returns the papers to the students.

Required

Draw a sequence diagram that represents this process. Make sure to show when each actor is participating in the process. Also, show the operation that is carried out during each interaction.

[10 Marks]

Question 5:

Consider the library Management system of PAC. A student is allowed to be issued books for a period of two weeks. Students can read newspapers/ magazines in the library and can even access the databases for e-books. The library staff is responsible for maintaining the records of students along with the issued books. The staff marks an entry in the register whenever a student is issued or returns a book. A fine is charged on student if he/ she fails to returns a book on time. The librarian is there to manage the staff, check the records and prepare reports for the registrar.

- i. Identify the actors. **[2**

Marks]

- ii. Identify the use cases. **[2**

Marks]

- iii. Draw a use- case diagram (with proper symbols and notations). **[6**

Marks]

Question 6:

In Model a scenario of the Withdraw Money use case of a Bank ATM system. The user is able to make withdrawal of money. The system employs a standard procedure of validating the card and account holder's password.

- i. List any two main objects. **[2**

Marks]

- ii. Describe the main flow of events in this scenario. **[3**

Marks]

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iii. Draw a UML deployment diagram for the ATM system.

[5

Marks]

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