CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

MAIN/EMBU CAMPUS

EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0231: OBJECT ORIENTED ANALYSIS AND DESIGN

STREAMS: DIP. COMP SCI. Y1S1   **TIME: 2 HOURS**

DAY/DATE: TUESDAY 21/09/2021   **11.30 A.M. – 1.30 P.M.**

INSTRUCTIONS:
- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

SECTION A

Question One [30 marks]

a. List any Four open-source UML development Tools   [4 marks]

b. Define the Following Terms in Object-oriented analysis and Design:

    i. UML   [2 marks]

    ii. Objects in UM   [2 marks]

c. Name and state the use of the following symbols in Activity Diagrams [6 marks]

Symbol	Name	Use

d. Why is a UML conceptual model is required in software projects? [4 marks]

e. How is UML different from programming languages such as C++? [2 marks]

f. List and Explain the three Goals of UML to organizations [6 marks]

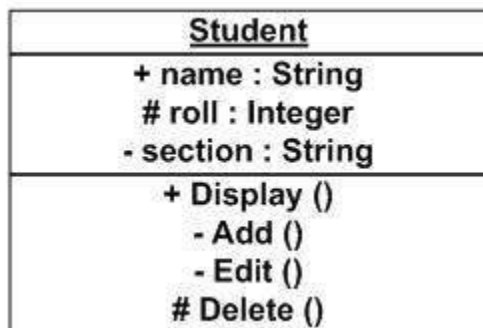g. Using diagrams, demonstrate the difference between a State Diagram and a Flowchart

[4 marks]

SECTION B [Answer Any Two Questions Only]

Question Two [20 marks]

a. List and Explain THREE Constraints of using Package diagrams [6 marks]

b. List and Describe the main purposes of using Statechart diagrams [6 marks]

c. Describe the UML steps before drawing a Statechart Diagrams [6 marks]
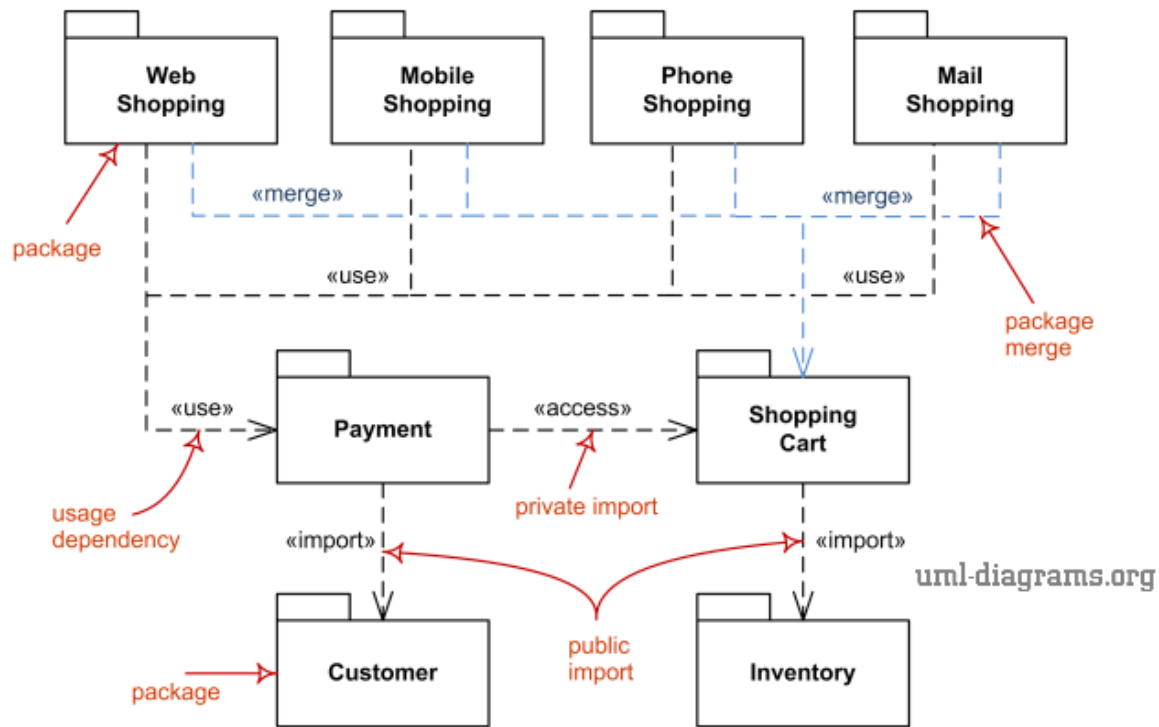
d. List two uses of State diagrams [2 marks]

Question Three [20 marks]

a. List and Explain the roles of four perspectives in UML [8 marks]

b. There are THREE different models of UML. List and provide diagrams of each model

[6 marks]

c. The Following is a Class diagrams, Name the Three parts of the Class diagrams [6 marks]

Student
+ name : String # roll : Integer - section : String
+ Display () - Add () - Edit () # Delete ()

Question Four [20 marks]

a. List Four applications of Class Diagrams [4 marks]

b. State Four Benefits of Class Diagram [4 marks]

c. List the three Essential elements of a UML class diagram [2 marks]

d. Fig 4.1 below is an example of a UML system

Fig. 4.1

    i. Classify the UML Fig. 4.1 [2 marks]

    ii. List and Explain the Four major elements of Fig 4.1 [8 marks]

Question Five [20 marks]

a. Distinguish Domain from Domain Model and provide ONE example of a Domain [4 marks]

b. The GoF/Gang of four created 23 patterns as the basis of all other UML patterns, briefly explain the following GoF patterns

    i.   Abstract Factory [2 marks]

    ii. Builder [2 marks]

    iii. Adapter [2 marks]

    iv. Bridge [2 marks]

    v.   Memento   [2 marks]

c. List and Explain any 3 fundamental objects of UML   [6 marks]

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