MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

FACULTY OF ENGINEERING, APPLIED SCIENCES AND TECHNOLOGY

DEPARTMENT: COMPUTER SCIENCE AND INFORMATION SYSTEMS

MODULE: SYSTEMS ANALYSIS AND DESIGN

CODE: INSY123

SESSIONAL EXAMINATIONS
DECEMBER 2023

DURATION: 3 HOURS

EXAMINER: MR S. MARIME

INSTRUCTIONS

1. Answer **All** in Section A
2. Answer any **three** questions in Section B.
3. Start a new question on a fresh page
4. Total marks 100

Additional material(s): None

Section A

Question 1

a. Define data flow diagrams (DFDs) and explain their purpose in system analysis and design. [5]
b. You are working with a team to develop a DFD for a patient admission process in a hospital. The process involves registering patients, assigning beds, and scheduling appointments for diagnostic tests. Draw a level-1 DFD for the process, and identify the inputs, outputs, and data stores. [20]

Section B

Answer any 3 questions in this section

Question 2

a) A customer wants to draw money from his bank account. He enters his card into an ATM. The automated teller machine prompts enter PIN. The customer enters his PIN. The ATM internally retrieves the bank account number from the card.

The ATM encrypts the PIN and the account number and sends it over to the bank. The bank verifies the encrypted account and PIN number. If the PIN number is correct, the ATM displays –enter amount, draws money.

Illustrate this sequence of events using the

   (i)   use case [8]

   (ii)   sequence diagram [9]

b) Describe the relationship and differences between logical and physical models. [8]

Question 3

a. Discuss the differences between functional and non-functional system requirements. [7]
b. Explain the methods used to determine system requirements, including examination of documentation, interviews, prototypes, questionnaires, vendor research, and joint application design sessions. [18]

Question 4

a) Discuss the importance of entity relationship diagrams (ERDs) in system analysis and design. [5]
b) You are tasked with designing a database for a hotel booking system. The system needs to keep track of guests, rooms, reservations, and payment details. Draw an ERD for the database, and identify the entities, attributes, and relationships between them. [20]

Question 5

Explain the purpose and benefits of Rapid Application Development (RAD) and eXtreme Programming (XP) methodologies. Compare and contrast these two methodologies and describe situations where each methodology would be most appropriate. [25]

END OF EXAMINATION