

PAN AFRICA CHRISTIAN UNIVERSITY

BACHELOR OF BUSINESS INFORMATION TECHNOLOGY AND BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: DICT 0134

CAMPUS: ROYSAMBU

COURSE TITLE: SYSTEM ANALYSIS AND DESIGN

EXAM DATE: WEDNESDAY,XXXX,AUGUST ,2025

TIME: 1100AM -2:00PM

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)

QUESTION 1

PAC University plans to digitize its library system to allow students to borrow and return books online, receive overdue notifications, and check book availability in real-time.

- a) Explain **TWO** roles that a systems analyst would play during the analysis phase of this project. **[2 Marks]**
- b) Explain **TWO** fact-finding techniques suitable for collecting information about the current manual library process. **[2 Marks]**
- c) Explore **TWO** Tools That Help Design a Library System **[2 Marks]**
- d) Describe **TWO** security-related non-functional requirements that must be considered when designing the library system. **[2 Marks]**
- e) Explain **two** reasons modularity and abstraction are important during system design.

[2 Marks]

SECTION B

(Answer ANY THREE questions)

QUESTION 2

A bus company is replacing its outdated fleet tracking system with a GPS-enabled software solution that provides real-time updates, fuel usage reports, and driver behavior monitoring.

- i. Explain **FOUR** phases of the SDLC and their relevance to this project. **[4 Marks]**
- ii. Discuss **THREE** risks associated with developing the system and how to mitigate them. **[6 Marks]**

QUESTION 3

A hospital wants to automate patient check-ins, queue generation, and notifications. The system must integrate with existing patient records and support touchscreens in the reception area.

- a) Explore functional decomposition and explain how it can be applied in designing the hospital's system. **[4 Marks]**
- b) Explain **THREE** user interface design principles that should be considered when designing the touchscreen system. **[6 Marks]**

QUESTION 4

A startup is building a mobile application for small-scale farmers in rural Kenya. The app will offer weather updates, planting calendars, and crop disease alerts.

- a) Describe **THREE** challenges that might be encountered during requirements gathering in rural areas **[6 Marks]**
- b) Explore **FOUR** key elements that should be included in the system proposal for this project. **[4 Marks]**

QUESTION 5

Assuming you are part of a team tasked with developing a student registration system for a university. As part of the system analysis and design phase, your responsibilities

include creating a Data Flow Diagram (DFD), an Entity Relationship Diagram (ERD), and a Decision Tree to model the system requirements and decision logic.

a) Explain the role of the following tools in system analysis and design:

- i) Data Flow Diagram (DFD)
- ii) Entity Relationship Diagram (ERD)
- iii) Decision Tree

[6 Marks]

b) Differentiate between one-to-many, and many-to-many relationships with examples.

[4 Marks]

QUESTION 6

An educational institution wants to develop an online examination portal with features like exam scheduling, automatic grading, and student performance analytics.

- i. a) Explain **THREE** types of system documentation that should be produced during the development of the exam portal. **[6 Marks]**
- ii. b) Describe **FOUR** benefits of involving end users throughout the system development process. **[4 Marks]**

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