NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

DEPARTMENT OF INFORMATICS AND ANALYTICS

BUSINESS INFORMATION SYSTEMS AND APPLICATIONS

SIA1201

Second Semester Examinations 2024

This examination paper consists of 4 pages.

Time Allowed: **3 hours**

Total Marks: **100**

Examiner's Name: **Mrs.M. Dzinomwa**

INSTRUCTIONS

1. Answer any four (4) questions.
2. Each question carries 25 marks.

MARK ALLOCATION

QUESTION	**MARKS**
1.	**25**
2.	**25**
3.	**25**
4.	**25**
5.	**25**
Total of 4 Questions	**100**

QUESTION ONE

a) Analyse a university as a system from an information systems perspective. Identify these key components:
   i. Input [2]
   ii. Output [2]
   iii. Process [2]
   iv. Goal [2]
   v. Feedback mechanism [2]

b) Inspect the business value chain model and its application in information systems. Discuss the key activities, support activities, and how information technology can be leveraged to enhance value creation within organizations. [5]

c) Companies should prioritize protecting data from unauthorized access or misuse when incorporating artificial intelligence into their information systems. Explain specific strategies for achieving this goal. [10]

QUESTION TWO

Provide two specific examples of how a big retail store can utilize information systems to accomplish each of the following:

   i. Low-cost leadership [5]
   ii. Enhanced product quality [5]
   iii. Globalization [5]
   iv. Service differentiation [5]
   v. Customer intimacy [5]

QUESTION THREE

a) Discuss the significance of system models in the context of information systems development. [5]
b) Use diagrams or symbols to visually represent the following elements of an entity-relationship diagram (ERD):
   i. Weak entity [2]
   ii. Derived attribute [2]
   iii. Primary key attribute [2]
   iv. Multi-valued attribute [2]
   v. Weak relationship [2]

c) Produce a use case diagram for the following scenario in a supermarket. [10]

When the warehouse clerk receives goods from the suppliers, he/she captures all the items into the inventory file and also updates all the inventory levels of the supplied items. The same clerk needs to constantly check inventory levels of all items in the warehouse, to avoid out-of-stock situations. When items are moved from the warehouse to the supermarket shelves, updates to the inventory levels are performed by the same clerk.

The quality control clerk also uses the same platform to grade supplied stocks according to the Standard association grading scheme. To keep the grading system simple, the quality control clerk uses three modes, i.e. High grade, medium grade, and Low grade. Goods remaining in the warehouse or shelves for longer than expected may move a grade lower after a certain period, where the clerk may then need to downgrade the item. A downgraded item is normally placed on a special offer.

The instore clerk also accesses the same system to place internal orders to the warehouse for any items within the shelves falling below a certain level. Before placing the order, the instore clerk needs to check the item levels on the shelves. When items are received from the warehouse, shelve levels are updated by the instore clerk.

QUESTION FOUR

a) Explain how artificial intelligence is changing the way companies gather, save, and examine data using information systems? [10]

b) You have been tasked to come up with an CRM system for your large multi-national mining company. As a project manager, outline the key activities involved in each phase of the 7-step SDLC for the new CRM system. [10]

c) Scrum is characterised by the use of a product backlog and a sprint backlog. Differentiate these two as used in Scrum. [5]

QUESTION FIVE

a) Table 1: School Website Project Activities

Activity	Predecessor	Duration (days)
A	-	6
B	A	3
C	A	3
D	B	2
E	D	5
F	c	1
G	E, F	3
H	G	2
I	G	3
J	H,I	4
K	J	7

Table 1 shows the activities to develop a school website and their times, use the table to answer the questions that follow.

a) Produce an activity on node diagram to depict the project activities. [5]
b) How long will the school website take to complete? [6]
c) If the project manager wishes to complete the project two (2) days earlier? What options are available to enable this? [4]

b) Select a supermarket chain and explain how the Porter Five Forces model can help them pinpoint areas where investing in technology improvements would give them a competitive edge. [10]

END OF QUESTION PAPER