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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2021 /2022 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER REGULAR EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE (APPLIED STATISTICS WITH COMPUTING)

COURSE CODE: COM 400

COURSE TITLE: COMPUTER PROGRAMMING

DATE: 31ST MAY, 2022 TIME: 0900 – 1200 HRS

INSTRUCTION TO CANDIDATES

a. SEE INSIDE

THIS PAPER CONSISTS OF 4 PRINTED PAGES **PLEASE TURN OVER**

REGULAR EXAM

COM 400: COMPUTER PROGRAMMING

STREAM: ASC **DURATION: 3 Hours**

INSTRUCTION TO CANDIDATES

Answer **ALL** questions from section A and any **THREE** from section B.

SECTION A [24 MARKS] ANSWER ALL QUESTIONS.

QUESTION ONE [12 MARKS]

a. Explain the following programming paradigms pointing out specific examples in each case.

i. Imperative paradigms **[2 marks]**

ii. Declarative paradigms **[2 marks]**

b. What is the role of backup and restore procedures in MS SQL Server. **[2 marks]**

c. Explain various stages followed by a compiler during program compilation process. **[6 marks]**

QUESTION TWO [12 MARKS]

a. Explain the advantages of using database management system over file-based systems. **[6 marks]**

b. Most companies, the likes of Microsoft Corporation, adobe Inc., oracle etc. are moving away from waterfall models toward iterative models such as incremental process model, prototyping and spiral. Discuss the rationale behind this shift. **[6 marks]**

SECTION B [36 MARKS] ANSWER ANY THREE QUESTIONS

QUESTION THREE [12 MARKS]

a. Differentiate between a database and a database management system. **[2 marks]**

b. You are in the process of developing an examination management system to manage and analyze students' results for Kenya National Examination Council (KNEC).

i. Of the existing database management systems, which database management system will you prefer and why? **[2 marks]**

ii. Give an outline of the main concepts in an examination database. **[3 marks]**

iii. Which situations do you think stored procedures and triggers will be important in the examination system? **[3 marks]**

iv. Explain why interface related issue will be crucial in the development process.

[2 marks]

QUESTION FOUR [12 MARKS]

a. Discus various components of a relational database management system. **[4 marks]**

b. Contrast between a view and a table in relational database management system's environment.

[4 marks]

c. What is referential integrity rule and how is it achieved in database management system.

[4 marks]

QUESTION FIVE [12 MARKS]

a. Using relevant SQL statements differentiate between:

i. Data Definition Language (DDL) and **[2 marks]**

ii. Data Manipulation Language (DML) **[2 marks]**

b. Explain what happens during:

i. Conceptual design **[2 marks]**

ii. Logical design **[2 marks]**

iii. Physical design **[2 marks]**

c. Write an SQL statement that will be used **create** and **delete** a database called **student** in MS SQL Server environment. **[2 marks]**

QUESTION SIX [12 MARKS]

a. Explain factors considered during interface design process based either on Shneiderman, Nielson or Norman interface design principles. **[3 marks]**

b. Using various MS Visual Studio tools, components and Graphical User Interface (GUI) objects draw an interface for a login page. **[3 marks]**

c. Write a C# method that will be used to clear the values from the fields of login page in b) above. **[3 marks]**

d. Define a C# class that will be used connect the login page in b) above to a database named examination. **[3 marks**

QUESTION SEVEN [12 MARKS]

Software Development Life Cycle (SDLC) is a process used by the software industry to design, develop and test high quality software's. It aims to produce a high-quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates. Explain what happen at each of the following stages, point out the kind of information needed:

a. Feasibility analysis **[2 marks]**

b. Requirements Analysis **[2 marks]**

c. System design **[2 marks]**

d. System implementation **[2 marks]**

e. System deployment **[2 marks]**

f. System maintenance **[2 marks]**

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