Uganda Martyrs University
UNIVERSITY EXAMINATIONS

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION SYSTEMS

END OF SEMESTER FINAL ASSESMENT

SEMESTER 2, 2022/2023

COURSE	:	BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY, BACHELOR OF SCIENCE IN COMPUTERSCIENCE, DIPLOMA IN COMPUTER SCIENCE & INFORMATION TECHNOLOGY
CLASS/YEAR	:	ONE & TWO
EXAM	:	SYSTEMS ANALYSIS AND DESIGN
CODE	:	CSC 1201
SEMESTER	:	TWO
DATE	:	16th MAY 2023
TIME	:	2:00 – 5:00 PM
DURATION	:	3 HOURS

Instructions
1. Attempt All Questions in Section A and two Questions in Section B.

2. Time Allowed 3 Hours Only.

3.. Use of relevant Illustrations/diagrams will earn you a bonus mark (s)where applicable.

4. Remember to indicate the question number and section you have answered.

5. Write your course and registration number on all your answer sheets.
6. All answers should be written on the answer booklet
7. All university rules apply

Section A

i. Give 2 major reasons as to why a higher institution of learning like UMU offer Systems analysis and design course to its learners? (2 marks)

ii. Describe the different stages involved in the Requirements Analysis process and explain the importance of each stage. (08 marks)

iii. Explain three (3) techniques that can be used for requirements elicitation. Describe an example of how each can be used to gather requirements.
(09 marks)

iv. Give 4 challenges that are common while executing systems analysis role.
(4 marks)

v. Discuss two (2) major differences between object-oriented development and structured approach. (4 marks)

vi. Explain any four(4) UML diagrams. (08 marks)

vii. With clear examples, differentiate between rapid application development and waterfall model. (5 marks)

Section B

Attempt two question s from this section.

Question One

a) What is the Systems Development Life Cycle (SDLC)? Explain the different stages involved in the SDLC. (14 marks).

b) Define the following and explain the importance of each in software development processes; (6 marks)
   a) Requirements validation.
   b) Requirements prioritization

c) Describe what you know about software design in details (10 marks)

Question Two

You are working as a software developer for a retail company that sells a wide range of products online. The company has been experiencing a significant increase in its online sales and is looking to develop a new e-commerce platform that can handle the

Validation
Verification.

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increased traffic and offer customers a better shopping experience. You have been assigned as a lead systems analyst for this project.

a) What are the 5 key roles that you plan to embark on in your role?   (05 marks)

b) One of your first task is to conduct a requirements analysis for the new e-commerce platform. Develop a requirements document that identifies the key requirements for the new platform.   (05 marks)

c) Mention 5 stakeholders that are vital and influential to the project in question.   (5 marks).

d) Design a plan for the implementation of the new e-commerce platform. Discuss two techniques that can be used for software implementation and explain the importance of testing during the implementation stage.   (10 marks)

e) Imagine the project has kicked off, draft a project report that can inform the stakeholders about the project status.   (05 marks)

Question Three

Think about the system that handles student admissions at Uganda Martyrs University. The primary function of the system should be able to track a student from the request for information through the admissions process until the student is either admitted to the school or rejected.

a) Use entity relationship diagrams to prepare a design that can be used by programmers to implement the above system. Clearly indicate the input/output processes, data flows and entities within the system (12 marks)

b) Write a use-case description that can describe an Admit Student use case. Assume that applicants who are children of alumni are handled differently from other applicants. Also, assume that a generic Update Student Information use case is available for your system to use.   (6 marks)

c) Create a use-case diagram that includes all of the above use cases. Assume that an admissions form includes the contents of the form, SAT information, and references. Additional information is captured about children of alumni, such as their parent's graduation year, contact information, and college major.   (7 marks)

d) What is the purpose of the following;   (5 marks)

i. A sequence diagram.

ii. The planning phase of the SDLC.

iii. Functional requirements.

iv. Updating software.

v. Upgrading software application.

(Handwritten margin notes):

key
5 roles
- Job creation / inception
- Scheduling allocation
- Resource allocation / the
- Process / deustt / project
- Execution
- Labour.

stakeholders include   requirements
- Users of the software → functional requirements → accessible, affordable, flexible
- Business owners   → user requirements
- Share holders   - user friendly   Validation
- service providers   - cost friendly   Verification.
    - reliable
    - convenient
    - available

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Question Four.

a) Using diagrams, explain the following concepts as applied in Object Oriented Analysis and Design. (10 Marks)

   i.   Object

   ii.   Class

   iii.   Polymorphism

   iv.   Encapsulation and Information hiding

   v.   Abstraction

b) Object-orientation is a software engineering concept, in which concepts are represented as objects. Explain the benefits that come with it. (5 Marks)

c) Discuss the major differences between object-oriented development and structured approach. (5 marks)

d) What is the importance of UML Modelling. (1 mark)

e) Patient (age, name, hobbies, blood type, occupation, insurance carrier, address, phone) (3 marks)

f) ii) Insurance carrier (name, number of patients on plan, address, contact name, phone) (3marks)

g) Doctor (specialty, provider identification number, golf handicap, age, phone, name) (3marks)

Question Five.

a) Differentiate between a work break down structure and a workplan (04 marks)

b) Draw a class diagram for each of the following situations: Jim Smith's dealership sells Fords, Hondas, and Toyotas. In order to get in touch with these manufacturers easily, the dealership keeps information about each of them. The dealership keeps information about the models of cars from each manufacturer, including dealer price, model name, and series (e.g., Honda, Civic, LX). Additionally, the dealership also keeps all sales information, including buyer's name, address and phone number, car purchased, and amount paid. (10 marks).

c) Create object diagrams based on the class diagrams you drew in b above. (06 marks)

d) With examples, differentiate between the following; (10 marks)

i. Primary data and secondary data in requirements gathering.

ii. Implementation and review

END

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