



UNIVERSITY EXAMINATIONS

**EXAMINATION FOR SEPTEMBER/DECEMBER 2019/2020 FOR BACHELOR OF
SCIENCE IN COMPUTER SCIENCE AND BACHELOR OF BUSINESS
INFORMATION TECHNOLOGY**

RCS 208: OBJECT ORIENTED ANALYSIS AND DESIGN

DATE: 13TH DECEMBER 2019

TIME: 2 HOURS

GENERAL INSTRUCTIONS:

Students are NOT permitted to write on the examination paper during examination time.

This is a closed book examination. Text book/Reference books/notes are not permitted.

SPECIAL INSTRUCTIONS:

This examination paper consists Questions in Section A followed by section B.

Answer **Question 1 and any Other Two** questions.

QUESTIONS in ALL Sections should be answered in answer booklet(s).

- 1. PLEASE start the answer to EACH question on a NEW PAGE.**
- 2. Keep your phone(s) switched off at the front of the examination room.**
- 3. Keep ALL bags and caps at the front of the examination room and DO NOT refer to ANY unauthorized material before or during the course of the examination.**
- 4. ALWAYS show your working.**
- 5. Marks indicated in parenthesis i.e. () will be awarded for clear and logical answers.**
- 6. Write your REGISTRATION No. clearly on the answer booklet(s).**
- 7. For the Questions, write the number of the question on the answer booklet(s) in the order you answered them.**
- 8. DO NOT use your PHONE as a CALCULATOR.**
- 9. YOU are ONLY ALLOWED to leave the exam room 30minutes to the end of the Exam.**
- 10. DO NOT write on the QUESTION PAPER. Use the back of your BOOKLET for any calculations or rough work.**

SECTION A (Compulsory)

QUESTION ONE (30 MARKS)

- (a) Explain each of the following UML inter-object relationships **(6 marks)**
- i. Generalization.
 - ii. Realization.
 - iii. Association.
- (b) Discuss prototyping as a systems development methodology. **(3 marks)**
- (c) Explain usability and efficiency as qualities of a good software product. **(5 marks)**
- (d) Do you think that Negotiation-based technique is a good requirements analysis approach? Explain your answer. **(4 marks)**
- (e) What do you understand by the External structure of a software? **(4 marks)**
- (f) Explain any four deliverables of a class design process. **(8 marks)**

SECTION B (Answer any Two Questions)

QUESTION TWO (20 MARKS)

- (a) Give a detailed description of Unified-modelling-Language (UML). **(4 marks)**
- (b) Discuss reasons for the use of models in object-oriented software engineering. **(16 marks)**

QUESTION THREE (20 MARKS)

- (a) In the use of a bank automated teller machine, the systems operator is responsible for the system start up and shutdown. A bank customer can have a session on the ATM during which, the customer performs required transactions. Customers who wishes to use the ATM needs to enter their personal identification number and can only be allowed to transact upon validation of the PIN, if PIN is invalid, a customer will not be allowed to perform any transactions related to the particular account. Transactions include withdrawal, deposit, money transfer and balance inquiry. Construct a use-case diagram to illustrate the use of the ATM. Your diagram must have, include, extend, and generalization relationships. **(12 marks)**
- (b) Draw a suitable activity diagram to illustrate the relationships between the ATM system, the bank and the customer. Your diagram should include the following activities: insert card, validation of PIN, checking balance, debiting account and removing card, among others. **(8 marks)**

QUESTION FOUR (20 MARKS)

- (a) Explain the systems implementation plan process. **(8 marks)**
- (b) Make recommendations on programming style “good practice” in systems development. **(4 marks)**
- (c) Explain the roles of header comments block and the line comments and discuss the importance of comments and internal documentation in systems development. **(8 marks)**

QUESTION FIVE (20 MARKS)

- (a) Discuss software failure and explain its causes. **(4 marks)**
- (b) Explain how to perform unit testing. **(5 marks)**
- (c) Explain the goal of integration testing and identify four types of integration tests that you know of. **(6 marks)**
- (d) What do you understand by black box testing? Describe the process. **(5 marks)**