



## UNIVERSITY EXAMINATIONS

### EXAMINATION FOR JANUARY/APRIL 2023/2024 FOR DEGREE IN COMPUTER SCIENCE / INFORMATION TECHNOLOGY

#### RCS 308: SYSTEM DEVELOPMENT METHODOLOGIES

DATE: 18<sup>TH</sup> APRIL, 2024

TIME: 2 HOURS

#### GENERAL INSTRUCTIONS:

Students are NOT permitted to write on the examination paper during exam 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) PERT is a probabilistic technique that uses three time estimates. Give examples of the following estimates: **( 6 Marks)**
- i. Pessimistic Time
  - ii. Optimistic Time
  - iii. Most Likely Time
- b) Enumerate three basic principles that determine how a system project schedule is created based on the activities. **( 3 Marks)**
- c) Explain how you will do beta testing of a fuel management system you designed and developed. **( 3 Marks)**
- d) An IoT based farm management system was developed by an organization using prototyping approach, describe any two characteristics of such a system. **( 2 Marks)**
- e) As a system developer, you have been tasked to develop a Student Management System. While including a list of activities in each, outline the system development stages and methodology used. **( 5 Marks)**
- f) Demonstrate the use of lean development approach when designing and developing a system. **( 4 Marks)**
- g) Describe Object Oriented system development methodology. Include an example. **( 4 Marks)**
- h) Discuss Double V-Model as used in Restaurant system development. **( 3 Marks)**

## SECTION B - Answer ANY other TWO questions

### QUESTION TWO ( 15 Marks)

- a) Enumerate the merits and drawbacks of Spiral Model and illustrate with an example. **( 3 Marks)**
- b) Discuss ethical issues that arise from designing, developing and implementing information systems. **( 3 Marks)**
- c) Define: **( 3 Marks)**
- i) Predictive Methodology
  - ii) Software Project Scheduling
  - iii) Slack as used in project tasks.
- d) What is a system Specification Document? **( 2 Marks)**

e) Differentiate between Critical path and critical task. ( 2 Marks)

f) Discuss the Joint Application Development methodology. ( 2 Marks)

**QUESTION THREE ( 15 Marks)**

a) Discuss Throw Away prototyping methodology when developing a Transport Management System. ( 3 Marks)

b) Enumerate two reasons why system development projects fail. Consider the software crisis of 1960s and 1970s. Give examples. ( 3 Marks)

c) Illustrate Phased development methodology. ( 3 Marks)

d) List the factors to consider when evaluating the development methodology used.( 2 Marks)

e) Discuss activity scheduling. Give an example. ( 3 Marks)

f) What is Project risk management? ( 1 Mark)

**QUESTION FOUR ( 15 Marks)**

a) Illustrate Capability Maturity Model (CMM) in a system testing process. ( 5 Marks)

b) Explain why use Delphi Technique in your system development process. ( 3 Marks)

c) What is a system development project sprint? ( 2 Marks)

d) Outline three important considerations a development/acquisition team need to take into consideration when they are selecting a methodology to use for a project. ( 3 Marks)

e) Differentiate between Process management and project management. ( 2 Marks)

**QUESTION FIVE ( 15 Marks)**

a) Discuss Extreme Programming methodology. ( 3 Marks)

b) As a system developer, your organization has tasked you to identify and initiate projects. How will you identifying system development projects. ( 3 Marks)

c) Describe Test Process Improvement ( TPI). ( 2 Marks)

d) Differentiate between Gantt Chart and PERT. ( 2 Marks)

e) Illustrate a situation where Insourcing is better than self-sourcing of system development.

**Marks)**

**( 3**

**f) Define CASE Tools as used in system development. Give an example.**

**( 2 Marks)**