

C10-R4: SOFTWARE SYSTEMS

NOTE:

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.

- a) Differentiate between Data and Information. Explain with an example.
- b) List the advantages of using prototyping as a systems design approach.
- c) Explain the importance of object reuse in detail. Briefly discuss the general activities in performing object-oriented analysis.
- d) What is the Rapid Application Development (RAD) strategy? List advantages and disadvantages of RAD.
- e) Define Architecture, Framework. Define Objective of Architectural Design? Why software architecture is important in software process?
- f) What is the role of UML in framing the architectures for the software? Differentiate between component and deployment diagram.
- g) Discuss the various strategies of design. Which design strategy is most popular? Why does the software design improve when we use object-oriented concepts?

(7x4)

2.

- a) Define Software process. What is the difference between Process and Methodology? What are the umbrella activities of a software process?
- b) Explain the waterfall model. What are the reasons for the Failure of Water Fall Model? What is the advantage of using prototype software development model instead of waterfall model?
- c) What is Software requirement Specification (SRS)? Why is it important? List the characteristic of a good quality SRS?

(6+6+6)

3.

- a) What is Software Architecture? Explain different Types of Architectural Styles.
- b) Describe design walk through and critical design review.
- c) What are Functional and Non Functional Requirements in Software Engineering? Discuss in detail.

(6+6+6)

4.

- a) Define a DFD. Explain how DFD can help to understand the working of software. Also explain the steps used for transforming a DFD into a structure chart.
- b) Explain in detail ER model used to represent the static view of a problem domain. Draw *E-R diagram* for the registrar's of University

A university registrar maintains data about the following entities: (a) courses, including number, title, credits, syllabus, and prerequisites; (b) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom; (c) students, including student-id, name, and program; and (d) instructors, including identification number, name, department, and title. Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

- c) What are the points that should be considered while constructing a Data Dictionary? Write the Data Dictionary entry for student course registration form.

(6+6+6)

- 5.
- a) Differentiate between structured analysis and structured design.
 - b) For the Inventory Management System, prepare the following models by describing the system with the problem statement.
 - i) Draw the Use case diagram
 - ii) Draw the sequence diagram.
 - c) What is Requirement Engineering? What are the Requirements Engineering Process Functions? Explain any two requirement elicitation methods.

(4+8+6)

- 6.
- a) Differentiate between function oriented designs and object oriented design.
 - b) What are the objectives of software design? How do we transform an informal design to a detailed design?
 - c) Differentiate Equivalence Class Partitioning and Boundary value analysis. Consider a program which computes the square root of an input integer between 0 and 5000. Determine the equivalence class test cases. Determine the test cases using boundary value analysis also.

(4+6+8)

- 7.
- a) "Quality of software can't be completely evaluated until the software is completely developed". Justify this statement.
 - b) Describe all Testing Strategies in Object-Oriented Context. Explain process of Test case Design for Object-Oriented Software.
 - c) Define Re-Engineering. What are the main objectives of re- engineering? Discuss in detail.

(6+6+6)