**UNITY UNIVERSITY**

**DEPARTMENT OF COMPUTER SCIENCE**

***Total Weight 60%***

1. ***WRITE YOUR:-***

***NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***IDNO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***DEPARTMENT\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***TIME ALLOWED:-3:00 hours***

1. ***INSTRUCTION:***
2. **DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO**
3. **SWITCH OFF YOUR CELL PHONES**
4. **MAKE SURE THAT THE EXAM BOOKLET CONTAINS 4 PARTS**
5. **WRITE YOUR ANSWERS FOR THE FIRST THREE PARTS OF YOUR QUESTIONS ON THE ANSWER SHEET PROVIDED AT THE END OF THE LAST PAGE OF YOUR QUESTION PAPER.**
6. ***FOR EVALUATION PURPOSE ONLY***

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| ***Contin. Assessment Result*** | ***Final Exam Result*** | ***Total*** | ***Grade*** |
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***Part One:- Write True if the statement is Correct and False if the statement is incorrect( 1 points each).***

1. Systems Analysis is the construction of a technical, computer based solution for the business requirements identified during systems analysis
2. SDLC is a type of methodology used to describe the process for building information systems, intended to develop information systems in a very deliberate, structured and methodical way, reiterating each stage of the life cycle
3. Requirements Analysis sometimes requires individuals/teams from client as well as service provider sides to get detailed and accurate requirements
4. Systems Design is the study of a business problem domain for the purpose of recommending improvements and specifying the business requirements for the solution
5. UML is a language whose vocabulary and rules focus on the conceptual and physical representation of a system and defines structural, functional and behavioral things and diagrams
6. Insufficient System analysis, user confusion of prototype and finished system, excessive development time of the prototype and intensive user participation in the development of the system is one of limitations of Prototyping.
7. Requirement definition captures the functional and non-functional requirements of the new system, tries to understand what users need and aims at building mainly the essential use case model and CRC
8. Class Diagrams model class structure and contents using design elements such as classes, packages and objects.
9. To model relationships in the UML, use dependencies only when the relationship is not structural and generalization only when the relationship is an “is-a-kind-of” or inheritance relationship
10. Maintenance and User Support is the physical specification is turned into a working system; the system is tested and then put to use

***Part Two:- Choose the correct answer from the given alternatives and write the letter of your choice on the answer sheet provided(1 point each)***

1. The following are the major activities performed in the object oriented analysis phase of System Development Life Cycle ***except one***?

1. Identify the main system classes, objects and relationships (or interactions)
2. Define design goals of the project and decompose the system into smaller subsystems that can be realized by individual teams.
3. Identify all the use cases of the system and the actors, and their relevance to your work
4. Identify the navigation required within and between use cases from the point of view of the actors
5. All of the above

2. Which of the following requirement describe what the system should do?

1. Functional Requirement C. Process Requirement
2. Non-functional Requirement D. Platform Requirement

E. None of the above

3. Which of the following requirement gathering method that brings together the key users, managers, and systems analysts involved in the analysis of a current system to collect systems requirements simultaneously?

1. RAD C. JAD
2. Prototyping D. Interviewing

E. Questionnaire

4. Which of the following characteristics of the system that limits to what the system can do (capacity, speed, and capability), some of these are imposed inside the system and others are imposed by the environment?

1. Decomposition C. Environment
2. Boundary D. Constraint

E. Interface

5. The first step in System Development is System Thinking, i.e.; think the real world as a system. Which of the following are the benefits of System Thinking?

1. Identify something as a system.
2. Identify where the boundary lies and all of the relevant inputs
3. Visualizing a set of things and their relationship as system
4. All of the above E. None of the above

6. Which of the following SDLC refers to the study of a business problem for the purpose of recommending improvements and specifying the business requirements for the solution?

1. Requirement Gathering C. System design
2. Requirement Analysis D. Implementation

E. None of the above

7. A system is said to be bad when one of the following issues are existed but ***except one***?

A. Fail to meet User requirements and poor performance

B. Scalability and Maintainability

C. Lack of usability and Reusability

D. All of the above E. None of the above

8. Which of the following is considered as the nature of Software?

1. Software is intangible i.e.; hard to understand development effort
2. The industry is labor-intensive which is hard to automate
3. Software is easy to modify to mean that people make changes without fully understanding it
4. All of the above E. None of the above

9. SDLC is a process used by a systems analyst (stakeholders) to develop an information system. Which of the following are the benefits of following standardized SDLC in the development of the system?

1. To complete the software project within the time frame defined and budget allocated.
2. To develop efficient and effective system that works in the current and planned IT infrastructure,
3. To release a system that is inexpensive to maintain and cost-effective to enhance
4. All of the above E. None of the above
5. The following are the benefits of Object Oriented System Analysis and Design over Structured System Analysis approach ***except one***?

A. Objects are reusable in OOSAD but not in SSAD

B. Maintenance cost are lowered in Object Oriented approach

C. Improved quality and maintainability is easy in Structured System Analysis and Design

D. Users can easily understand objects

E. All of the Above

12. Which of the following UML diagrams are used to describe the structure of the System?

A. Use Case and sequence Diagram

B. Component and Class Diagram

C. Activity and Collaboration Diagram

C. All except B E. None of the above

13. The following statement is correct about UML (Unified Modeling Language) ***except one***?

1. UML is a method or methodology that defines structural, functional and behavioral things and diagrams
2. UML does not dictate a particular process
3. UML can be used to record the resulting domain and design models, independent of the process
4. UML is a graphical language used to vvisualize and specify the building models that are precise, unambiguous, and complete
5. All of the above

14. Which of the following UML diagram is used to describe behavior and Function of the system that you develop?

1. Use Case Diagram C. Object Diagram
2. Sequence Diagram D. Activity Diagram

E. All except C

15. Which of the following UML model is an interaction diagram that emphasizes the time ordering of messages between objects and use the Use Case and Class Diagram as a starting point for modelling?

1. Sequence Diagram C. Collaboration Diagram
2. Deployment Diagram D. Activity Diagram

E. All except C

16. The following are the activities involved to model a system using Class Diagram ***except one***?

1. Identify Objects and Classes and association between objects
2. Identify the interactions between of messages between objects
3. Identify Class attributes and Initial set of operations
4. Organize object classes using inheritance
5. None of the above

17. Which of the following UML diagram is used to model the static design view of the system?

1. Sequence Diagram C. Use Case Diagram
2. Activity Diagram D. Class Diagram

E. Deployment Diagram

18. Which of the following are included under Supplementary Specification part in the Requirement Elicitation phase of System Development?

1. Business Rule C. Change Case
2. Non-functional Requirement D. Constraint

E. All of the above

19. The following statement describes Object Oriented System Analysis phase of System Development Life Cycle (SDLC) ***except one***?

1. The analysis phase will be used to understand the system itself in addition to the user usage
2. The analysis phase will be used to understand what to build
3. The result of object-oriented analysis is a description of what the system is functionally required to do, in the form of a conceptual model
4. The Analysis phase tries to understand what the user needs and their usage of the system
5. None of the above

20. Which of the following links between Requirement Gathering and Analysis is ***incorrect***?

1. The artifacts of Class model at analysis level is Use Case Model and UI flow Diagram in Requirement Gathering
2. The input of System Use Case at analysis level is taken from the Essential Use Case diagram and Business rule of requirement gathering
3. Sequence Diagram at analysis level is modeled for each use cases in the System Use Case Diagram or Class Model at Analysis level
4. The artifacts of System UI model at analysis level is Essential UI Diagram and its flow diagram at Requirement Elicitation phase
5. None of the above

***ANSWERSHEET***

***Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_IDNO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***Department\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

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| --- | --- | --- | --- | --- | --- |
| ***TRUE/FALSE ITEMS*** | | ***CHOICE ITEMS*** | | | |
| **1** |  | **1** |  | **11** |  |
| **2** |  | **2** |  | **12** |  |
| **3** |  | **3** |  | **13** |  |
| **4** |  | **4** |  | **14** |  |
| **5** |  | **5** |  | **15** |  |
| **6** |  | **6** |  | **16** |  |
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| **8** |  | **8** |  | **18** |  |
| **9** |  | **9** |  | **19** |  |
| **10** |  | **10** |  | **20** |  |

***Part Three:- Read the following questions carefully and give short answer, draw a diagram, and prepare documentation accordingly. Use the blank paper attached to your question paper for your answer (30 points)***

1. List down some of the Use Cases you identify in your group project(5 points)
2. Read the following Problem domain of University Registration System and answer the following questions accordingly (8 points)

Professors indicate which courses they will teach on-line. A course catalog can be prepared and printed to start to teach. The system allows students to select on-line four courses for upcoming semester and no course may have more than 10 students or less than 3 students. When the registration is completed, the system sends information to the billing system. The system allows a Professor to obtain course rosters on-line. And the system enables students can add or drop classes on-line.

* 1. Identify all the Use Cases (functionality of the system)
  2. List down the actors with its corresponding description.
  3. Draw System Use Case Diagram
  4. Prepare Use Case Documentation for one of the Use Case (SelectCourseToTeach)

1. Read the following business problem and answer the following questions accordingly?( 17 points)

On-line Bookstore is a web application that can be accessed by the store’s registered customer, whereby each customer can order books, review one or more books sold in the book store, and sell used books to other customers. Before performing any one of these transactions, the customer must first log-in into the system using their user id and password kept in their account.

1. Identify all the classes from this problem domain (3 points)
2. Draw the Class Diagram. Consider all the relationships to model the class Diagram and all the necessary steps you may follow to model the class diagram (6 points)
3. Identify all the Use Cases from this business problem (2 points)
4. Draw Sequence Diagram for at least two Use Cases you identify in Question No. C (6 points)