NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS
DEPARTMENT OF INFORMATICS, JOURNALISM AND MEDIA TECHNOLOGY

QUALIFICATION : BACHELOR OF INFORMATICS	
QUALIFICATION CODE: 07BAIT	COURSE LEVEL: NQF LEVEL 6
COURSE: SYSTEMS ANALYSIS AND DESIGN	COURSE CODE: SAD621S
DATE: NOVEMBER 2022	SESSION: 1
DURATION: 2 Hours	MARKS: 80

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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THIS EXAMINATION PAPER CONSISTS OF 6 PAGES
(INCLUDING THIS FRONT PAGE)

Instructions for the students
1. Attempt all questions
2. Use a separate booklet to write your answers
3. Please ensure that your handwriting is legible, neat and presentable

Section A: **[20 marks]**

1. System Study involves
    A. Study of an existing system
    B. Documenting the existing system
    C. Identifying current deficiencies and establishing new goals
    D. All of the above
    E. None of the above

2. The primary tool used in structured design is a
    A. Structure chart
    B. Data-flow diagram
    C. Program flowchart
    D. Module
    E. None of the above

3. In a _____ one module of the new information system is activated at a time.
    A. System Development Life Cycle
    B. CASE tool
    C. Phased Conversion
    D. Success factors
    E. None of the above

4. In Prototyping
    A. BASIC is used
    B. COBOL is used
    C. 4GLs are used
    D. System is documented
    E. None of the above

5. The approach used in top-down analysis and design is
    A. To prepare flowcharts after programming has been completed
    B. To identify a top – level function and then create a hierarchy of lower level modules and components
    C. To identify the top – level functions by combining many smaller components into a single entity
    D. All of the above
    E. None of the above

6. The approach used in top-down analysis and design is
    A. To identify the top-level functions by combining many smaller components into a single entity
    B. To prepare flow charts after programming has been completed
    C. To identify a top-level function and then create a hierarchy of lower-level modules and components
    D. All of the above
    E. None of the above

7. Which of the following is not a factor in the failure of the systems development projects?

    A. Size of the company
    B. Inadequate user involvement

C. Failure of systems integration
D. Continuation of a project that should have been cancelled
E. None of the above

8. Documentation is prepared
    A. At every stage
    B. At system design
    C. At system analysis
    D. At system development
    E. None of the above

9. Data Definition Language (DDL)
    A. Describes how data are structured in the data base
    B. Specifies for the DBMS what is required; the techniques used to process data
    C. Determine how data must be structured to produce the user's view
    D. All of the above
    E. None of the above

10. During the maintenance phase
    A. System requirements are established
    B. System analysis is carried out
    C. Programs are tested
    D. All of the above
    E. None of the above

11. Problem analysis is done during
    A. System design phase
    B. Systems analysis phase
    C. Before system test
    D. All of the above
    E. None of the above

12. Elapsed time, between initiating a query and receiving a response is called
    A. Response time
    B. Waiting time
    C. Processing time
    D. Turnaround time
    E. None of the above

13. Which of the following appropriately explains the desirable characteristic of good system design?
    A. Modular approach
    B. Proper documentation
    C. Conversion
    D. Long discussions
    E. None of the above

14. The feasibilities studied in preliminary investigation is (are):
    A.   Technical feasibility
    B.   Economic feasibility
    C.   Operational feasibility
    D.   All of the above
    E.   None of the above

15. Cost-Benefit Analysis is performed during
    A.   Analysis phase
    B.   Design phase
    C.   Feasibility study phase
    D.   Implementation phase
    E.   Maintenance phase

16. Which of the following strategies are adopted if information requirements are not well-defined?
    A.   Rapid application development method
    B.   Structured analysis development method
    C.   Systems development life cycle method
    D.   Prototyping method
    E.   Spiral method

17. Which of the following is not a fact-finding technique?
    A.   Third party enquiry
    B.   Interview
    C.   Questionnaire
    D.   Record reviews
    E.   Observation

18. Which of the following statements is false with respect to a Data Dictionary
    A.   It is a repository of the elements in a system
    B.   Data dictionary and data store both are same
    C.   It manages detail
    D.   It communicates the common meanings for system elements and activities
    E.   It documents system features

19. The black box concept assumes that;
    A.   The super system is stable
    B.   Black boxes are dependent or environments
    C.   The relationship between the inputs and output is stable
    D.   All of the above
    E.   None of the above

20. The procedure for evaluating the relative performance of different computers, is done by the process called
    A.   Batch processing
    B.   Sequential processing
    C.   Bench marking
    D.   All of the above
    E.   None of the above

Section B: **[30 marks]**

Question 1:

Explain the following terms as used OOA/D

      i.   Actor   **[2 marks]**
     ii.   Attribute   **[2 marks]**
   iii.   Build or Buy   **[2 marks]**
    iv. Physical design   **[2 marks]**
     v.   Benchmark testing   **[2 marks]**
    vi. Adaptive maintenance   **[2 marks]**

Question 2:

In Object Oriented Analysis/Design (OOA/D) classes are used to model data. Using knowledge gained in OOA/D answer the following:
      i.   Define a Class, Subclass, and Superclass   **[3 marks]**
     ii. Provide an example of the above classes.   **[6 marks]**
   iii. OOA/D supports different types of inheritance. Describe using example (s) any Three (3) types of inheritance you are familiar with.   **[9 marks]**

Section C: **[30 marks]**

Question 1:

Scenario 1 shows the credit card application process in a local bank. Carefully read the scenario and attempt the question that follow.

Scenario 1: Applying for a credit card
- A customer fills out an application form and sends it to a bank,
- The bank completes a credit check and if the customer's credit is not acceptable, returns the application with an explanation,
- If the application is accepted, the bank mails the customer two separate items (in two separate envelopes):
  - The credit card itself
  - The customer's Personal Identification Number (PIN)
- When the customer has received both, he activates the card by making a phone call

Draw a Use Case diagram for Scenario 1.   **[15 marks]**

Note:
Your Use Case diagram should show the following information:
- Names of use case and Actors
- Description of purpose
- Triggers
- Pre-conditions, Post-conditions

Question 2:

Table 1 shows activities and duration for an information system project. Use it to answer the questions that follow.

Table 1: Information System Project

ACTIVITY		PREDECESSOR	DURATION
1	Planning	-	5
2	Coding	1	6
3	Testing	-	6
4	Review	2, 3	15
5	Walkthrough	2, 3	7
6	Evaluation	5	5
7	Review	4, 6	5

i. Draw a PERT chart to represent the Information Systems Project activities   [10 marks]
ii. Show the critical path of the Information Systems Project.   [3 marks]
iii. Justify the selection of your critical path   [2 marks]

END OF EXAMINATION