UNIVERSITY EXAMINATIONS

UNIVERSITEITSEKSAMENS

UNISA university of south africa

ICT2621

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STRUCTURED SYSTEMS ANALYSIS AND DESIGN

Duration : 2 Hours

100 Marks

EXAMINERS :

FIRST .	MR S SSEMUGABI
SECOND	MR MC MALOMA

Closed book examination.

This paper consists of 15 pages.

Instructions

1. Answer all the questions
2. Answer **BOTH** sections A and B in the answer book. Please **DO NOT** use a mark-reading sheet.
3. Make sure you have the correct examination paper.

Section A (40 marks)

This section consists of multiple-choice questions. In your answer book, in each case write down the number of the question, and next to it the letter representing the correct option, for instance 35 a or 35 A

1. A set of related components that produces specific results is known as_____
   1. information system
   2. software packages
   3 system
   4. application system

2. From a system analysis and design perspective, a (an) _____ is one that is vital to a company's operations
   1. mission-critical system
   2. information system
   3. in-house application
   4. system software

3. Which one of the following statements is NOT correct?
   1. Data consists of basic facts that are the system's raw material
   2. Information is data that has been transformed into output that is valuable to users
   3. An information system can store data in various locations, called tables
   4. Process describes the tasks and business functions that other systems perform to achieve an output

4. System analyst use a process called _____to represent company operations and information needs.
   1. Business process engineering
   2. Data Manipulation Management
   3. Business process modelling
   4. Data modelling

5. Which of the following represents an overview of a company's mission, functions, organisation, products, services, customers, suppliers, competitors, constraints, and future direction?
   1. Business Process
   2. Business Profile
   3. Business Plan
   4. None of the above

6. Electronic commerce between two companies used a data sharing arrangement called _____that enabled computer-to-computer data transfer, usually over private communication lines.
   1. Electronic Data Interchange
   2. Supplier relationship management
   3. Business-to-Business
   4. Supply chain management

7. Which of the following statements is NOT correct?

   1. Enterprise computing refers to information systems that support company-wide operations and data management requirements
   2 Transaction processing systems process data gathered by day-to-day business operations
   3. Enterprise resources planning systems provide cost effective support for users and managers throughout the company
   4 Knowledge management systems provide job-related information support to users at all levels of a company

8. Which of the following statements is NOT True about Knowledge Management Systems?

   1. They are also called expert systems
   2. They simulate human reasoning by combining a knowledge base and inference rules that determine how the knowledge is applied
   3. They use inference rules to identify data patterns and relationships
   4. They use strict logical rules

9. Ensuring that users are involved in the development process falls under which step in the system development guidelines?

   1. Develop a plan
   2. Involve users and listen carefully to them
   3. Use project management tools and techniques
   4. Remain flexible

10. Strategic review starts with a management review called _____which usually starts with a broad overview.

1 SWOT analysis

2. Mission statement

3 Vision statement

4. Long term planning

11. This term _____refers to the reasons, or justification, for a proposal and should be comprehensive, yet easy to understand

1. Business profile

2. Business plan

3 Business case

4. Business process

12. Which of the following is NOT one of the main factors that affect system projects?

1. User requests

2. Technology

3. The economy

4. Business case

13. Which of the following is not a simple requirement for designing a system request form?

1. It must be easy to understand and include clear instructions

2. It streamlines the request process and ensures consistency

3. It should include enough space for all required information and should indicate what supporting documents are needed

4. It examines what IT resources are required for the preliminary investigation

14. When planning the preliminary investigation one of the steps is to perform fact finding. Looking at the following, identify which of the steps is not true about fact finding.

1. Analyse organizational charts
2 Conduct surveys
3. Review documentation
4. Observe operations

15. When analysing the data we use_____ which is a widely used tool for visualizing issues that need attention.

1. XY chart
2. Gantt chart
3. Pareto chart
4. Bar chart

16. What does it mean by "determining the project scope" when planning the preliminary *investigation*?

1. Defining the specific boundaries, or extent, of the project
2. Determining how much the project will cost
3. Estimating timelines for the project
4. Finding the relevant people to carry out the project activities

17. What is the objective of performing fact finding during preliminary investigation?

1 To gather information about the whole project from start to finish
2. To gather data about project usability, cost, benefits, and schedules
3. To make estimations about future events of the project
4. To determine whether the final product will work

18 A popular technique for investigating causes and effects is called_____.

1. Fish bone diagram/ishikawa diagram
2. Pareto chart
3. XY chart
4. Gantt chart

19. Projects with very general scope definitions are at risk of expanding gradually, without specific authorisation, in a process called_____.

1 Scope creep
2. Project creep
3. Fact-Finding
4. Schedule feasibility

20. Which one of the following statements is not an objective of a system analysis phase?

1. To understand the proposed project
2. To ensure that the project will support business requirements
3. To build a solid foundation for system development
4. To implement the project activities

21. Which of the following techniques is a popular fact-finding technique that brings users into the development process as active participants?

1. Rapid Application Development
2. Joint Application Development
3. Agile Methods
4. Prototyping

22. Because users are involved in every step in the development process_____ is a popular user-oriented technique for fact finding that speeds up information systems development and produce (s) a functioning information system.

1. Rapid Application Development
2 Joint Application Development
3 Agile Methods
4 Prototyping

23 Which one of the following is NOT an advantage of Agile methods?

1 Flexible and efficient in dealing with change
2. Stress team interaction and reflect a set of community based values
3 System can be developed more quickly with significant cost savings
4. Frequent deliveries constantly validate the project and reduce risks

24. Which of the following diagrams shows how the system stores, processes, and transforms data?

1. Sequence diagram
2. Data Flow diagram
3. Use Case diagram
4. Functional Decomposition diagram

25. A system's ability to handle increased business volume and transactions in future is referred to as_____.

1. Total cost of Ownership
2. Rapid Economic Justification
3. Transaction Volume
4. Scalability

26. When studying an information system, one should collect examples of actual documents using a process called_____.

1. surveying
2. interviewing
3. sampling
4. research

27. Which of the following statements is NOT correct?

1. Document review helps in understanding how the current system is supposed to work
2. Observation of current operating procedures gives and additional perspective and a better understanding of system procedures
3. A survey is a document containing a number of standard questions that can be sent to many individuals
4. Sampling refers to a small group discussion of specific problem, opportunity or issue

28. Suppose you have a list of 200 customers who complained about errors in their documents, and you want to review a representative sample of 20 customers. What kind of sampling technique will you use to select every tenth customer for review?

1. Random sampling
2. Stratified sampling
3. Systematic sampling
4. Testing

29. A process where the transfer of information systems development, operation, and maintenance to an outside firm that provides these services, for a fee, on a temporary or long term basis is known as_____.

1. Contracting
2. Home-sourcing
3. Strategic Alliance
4 Outsourcing

30 A software package that can be used by many different types of organisation is called _____.

1. Off-the-shelf software
2. In-house software
3. Horizontal application
4. Vertical application

31. Organisations are normally faced with decisions on whether to develop software packages in-house or to buy them from the vendors. From the following statements which one is NOT a reason for developing an application in-house?

1. Require less time to implement
2. Minimize changes in business procedures and policies
3. Develop internal resources and capabilities
4. Meet constraints of existing technology

32. Identity which of the following statements is not a major step in the software acquisition process

1. Evaluate the information system requirements
2. Presenting requirements to management
3. Identify potential vendors or outsourcing options
4. Performing cost-benefit analysis

33. A method that produces an early, rapidly constructed working version of the proposed information system is known as_____.

1. Scalability
2. Outsourcing
3. Prototyping
4. Stepwise refinement

34. Which one of the following is NOT a cost analysis tool?

1. Total Cost of Ownership
2. Payback Analysis
3. Net Present Value
4. Return on Investment

35. A Many IT professionals use the term _____ to describe a second generation of the web that will enable people to collaborate, interact, and share information much more effectively.

1. Web 2 0
2. Oracle for WebSphere
3. Oracle On Demand
4. NET

36. Which of the following refers to producing a full-featured, working model of an information system?

1. Prototyping
2. Outsourcing
3. Coding
4. Benchmarking

37. What name is given to a technique that uses a common yardstick to measure and compare vendor ratings?

1. Scalability
2. Outsourcing
3. Evaluation model
4. Benchmarking

38. Which model has a variable fee based on the number of users or workstations that have access to the application?

1. Evaluation model
2. Usage Model
3. Fixed fee model
4 Subscription model

39. Which of the following is not a guideline to follow when determining data entry and storage considerations?

1. Data should be entered into the system where and when it occurs
2 Data should be verified when it is entered
3. Data duplication should be encouraged
4. Data should be entered into a system only once

40. In an approach called _____ prototyping, systems analysts use prototyping to verify user requirements, after which the prototype is discarded and implementation continues

1. Discard
2. Recycled
3. Trash
4. Design

Section B (60 marks)

1. **Scenario:**

In a university department, in order to grade students' marks, lecturers provide grading parameters to a grading system. A class list from the student records system is used in the generation of the final grade by the grading system for this records system. Students submit their work directly to the grading system and receive their graded work from it. The lecturers receive grade reports from the system.

1.1 Draw a context diagram for this grading system using only the information provided in the scenario above. All DFD symbols used should be clearly named. Remember to use the Gane and Sarson symbols/notation when drawing data flow diagrams (DFDs). (10)

1.2 Write down the DFD names of the symbols you used in the diagram you drew in 1.1. There is no need to redraw them. (3)

1 3 What is a *Gray hole*, when dealing with DFDs? (1)

1.4 Draw an example of a *gray hole* of your choice including the **name** of a process, input And output. (3)

1 5 With respect to DFDs, briefly describe a *Data dictionary*. (2)

2.1 How is a user interface (UI) related to Human-Computer Interaction (HCI)? (2)

2.2 "*Providing feedback to users*" is one of the principles of user centred-design. Give any five guidelines that support this principle. (5)

3. **Scenario:**

Imali estate is an enclosed housing complex made up of many home units each of which belongs to a block .Each unit has an owner who may have more than one unit. It has been established that some units have more than one owner. Each month, the governing body of this complex, called *Imali body corporate*, needs to be able to send electricity and water bills to each owner (s) for the different units they have. Sometimes the body corporate also need to know how much water or electricity is used by each block. Note that water and electricity meter readers only exist on each unit.

3.2 Create a relational database schema from the ERD you designed in Question 3.1, showing all tables in 3NF. Each table should include at least three fields. Appropriate primary keys should be used. Primary keys must be underlined and each foreign key should have the letters FK in brackets after it, for instance, xyz (FK).Note that the calculated fields need not be part of the database. However, it should be possible to determine their values using the data captured (4)

4.1 Draw a structured chart for "Calculate pay amounts" program module with subordinate modules that calculate the base amount, overtime, taxes, and 'other deductions'. All modules and data couples (data from one to another) should be shown and named appropriately. (10)

4.2 Name and briefly describe any two system changeover methods. (4)

5.1 What are the three main objectives of an IT help desk? (3)

5.2 Briefly describe each of the following with respect to system support and maintenance
- 5.2.1 A patch (2)
- 5.2.2 Change control (2)
- 5.2.3 What-if analysis (2)