

UNIVERSITY OF FORT HARE

IFS224 & IFS224E

BUSINESS & SYSTEMS ANALYSIS

DECEMBER 2024 (SUPP)

.....
Time: 3 Hours

Marks: 100

This paper consists of NINE (9) pages including the cover page

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Internal Moderator

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GENERAL INSTRUCTIONS TO CANDIDATES

1. This paper consists of **THREE (3) SECTIONS**.
 - a. Answer **ALL** questions in SECTION A on the **answer sheet** provided.
 - b. Answer **ALL** question in SECTION B.
 - c. Answer **ALL** questions in SECTION C.
2. Questions can be answered in any order but must be numbered correctly. Any answers you do not want marked must be clearly cancelled.
3. Time management is very important. The value of the mark for each question should be used as a rough guide to the amount of time allocated to answer the question. (100 marks in 180 minutes)
4. It is in the candidate's interest to write neatly.
5. At the end of the examination place all answer books inside the first answer book used.
6. Pencil may be used for the modelling questions.

SECTION A

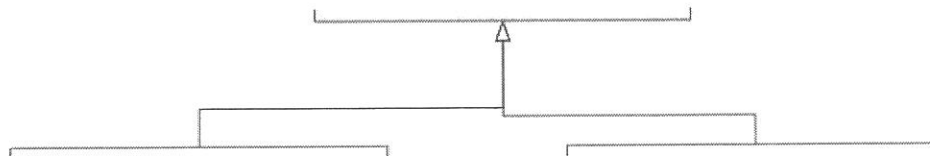
[ANSWER ALL OF THE QUESTIONS IN THIS SECTION]

Question 1

[30 marks]

Multiple Choice Questions

- 1.1. When a system is partitioned into pieces, each piece is referred to as a...
- A) application
 - B) package
 - C) subsystem
 - D) program
- 1.2. Such things as how to do project planning, or how to do cost/benefit analysis, or how to conduct an interview are called....
- A) techniques
 - B) strategies
 - C) methodologies
 - D) a knowledge base
- 1.3. After investing resources in thoroughly understanding the business problem, the analyst decides that the costs of solving the problem will likely outweigh the benefits. The analyst should...
- A) move to the design activities
 - B) invest more in the project to increase the benefits
 - C) resolve feasibility issues
 - D) suggest that the project be discontinued
- 1.4. An association class is required for what kind of relationship?
- A) zero to one
 - B) one to many
 - C) many to many
 - D) zero to many
- 1.5. This notation indicates what type of association?



- A) Aggregation
- B) Composition
- C) Association
- D) Generalization/Specialization

- 1.6. In a data flow diagram (DFD) external entities are represented by a ...
- A) rectangle
 - B) ellipse
 - C) diamond shaped box
 - D) circle
- 1.7. External Entities may be a
- A) source of input data only
 - B) source of input data or destination of results
 - C) destination of results only
 - D) repository of data
- 1.8. What is meant by including a use case?
- A) Creating a new use case by adding new steps to an existing base use case
 - B) Creating a new use case by removing steps from an existing base use case
 - C) Adding exception and alternative flow to an existing base use case
 - D) Reusing one use case's steps inside another use case
- 1.9. What does the use case narrative describe?
- A) The role of actors when they use the system
 - B) How the use cases are assembled on the use case diagram and their order of execution
 - C) The communication between the use case and actors and/or other use cases
 - D) The internal behaviour of the system when the use case is executed

- 1.10. Which symbol is used to represent decision in an activity diagram?
- A) rectangle
 - B) circle
 - C) square
 - D) diamond
- 1.11. What can never connect between two different pools in a business process modeling notation (BPMN) diagram?
- A) A message flow
 - B) A swim lane
 - C) An event
 - D) A sequence flow
- 1.12. An approach to the SDLC that plans the project in advance and then progresses according to the plan is called what?
- A) A predictive approach
 - B) An adaptive approach
 - C) An Agile approach
 - D) A project management approach
- 1.13. Which of the following is NOT an agile value?
- A) Comprehensive documentation
 - B) Responding to change over following a plan
 - C) Individuals and interactions over processes and tools
 - D) Customer collaboration over contract negotiation
- 1.14. A synonym for cardinality (used with UML class diagram) is...
- A) relationship
 - B) multiplicity
 - C) unary relationship
 - D) inheritance
- 1.15. A picture of the movement of data between external entities and the processes and data stores within a system best describes a(n):
- A) Data Flow Diagram
 - B) Decision Table
 - C) Entity-Relationship Diagram

D) Structure Chart

- 1.16. Which of the following best describes a use case diagram?
- A) It is text describing in detail one flow of events through a real situation
 - B) it is the system specification problem statement
 - C) It is text which describes the dialogue between actors and the system
 - D) a diagram drawn to illustrate how use cases and actors interact by sending messages to one another
- 1.17. In an activity diagram, the... Is the single solid circle representing the start of the process.
- A) conditions
 - B) decisions
 - C) initial node
 - D) actions
- 1.18. What connects a BPMN shape to a BPMN shape, and a BPMN pool to a BPMN pool?
- A) An event and a message flow
 - B) A data object and a message flow
 - C) Message flow and a sequence flow
 - D) Sequence flow and a message flow
- 1.19. What do you never use to connect objects in a process pool?
- A) A sequence flow connector
 - B) A message flow connector
 - C) A pool
 - D) An activity
- 1.20. In an activity diagram, are the rounded rectangles representing individual steps
- A) activities
 - B) conditions
 - C) flow
 - D) initial nodes

True/False Questions

- 1.21. When describing an external event, there is no need to worry about the person or thing causing the event.
- 1.22. All paths in a BPMN process must end with an end event.
- 1.23. An information system often includes the software, the database, and the related manual processes.
- 1.24. A key reason that modeling is important in system development is the complexity of describing information systems.
- 1.25. A project that has high technical risk should use the predictive approach
- 1.26. An actor is a person that plays a particular role within a business process
- 1.27. An alternate flow of events in a use case narrative is a series of events that happens all the time.
- 1.28. Data cannot flow from an external entity to another external entity in a Data Flow Diagram (DFD).
- 1.29. The difference between the system boundary and the automation boundary is that the system boundary is contained within the automation boundary.
- 1.30. A key reason that modeling is important in system development is the complexity of describing information systems.

SECTION B

[ANSWER **ALL** QUESTIONS IN THIS SECTION]

Question 2

[20 marks]

Scenario: UniTech Solutions is a mid-sized technology company based in Johannesburg with 400 employees across three offices: Johannesburg (headquarters), Cape Town and Durban. The company specializes in software development and IT support for local businesses. The company is structured with a small executive team (CEO, CTO, COO), middle managers and supervisors who supervise staff including developers, support agents, and sales representatives. About 50 employees work remotely.

UniTech plans to develop an internal system to streamline project management, communication, and workflow across all offices. The current processes are inefficient, spread across different tools, and cause delays in communication. The goal is to improve team coordination and data accessibility. Gathering accurate requirements from staff at all levels, across all offices, is critical for the success of this project.

Satzinger, Jackson and Burd (2015) describe various techniques for gathering requirements for a systems development project. Compare and contrast the Interview and Questionnaire methods of fact-finding in the context of the above scenario. Include the following in your answer:

- 1) A definition of each method. (4)
- 2) Describe two advantages and two disadvantages of each method. (8)
- 3) Suggest appropriate methods of gathering requirements from each of the four levels of stakeholders in the scenario. Provide reasons for your answers. (8)

Question 3

[10 marks]

There are six recognised core agile values for a business analyst. Name and briefly describe the six core agile values.

Question 4

[10 marks]

Satzinger, Jackson and Burd (2015) describe functional and nonfunctional requirements

- a. Explain the difference between functional and non-functional requirements. Provide examples to clarify your answer. (5)
- b. Identify and describe five categories of non-functional requirements. (5)

SECTION C

[ANSWER **ALL** OF THE QUESTIONS IN THIS SECTION]

Question 5

[15 marks]

Scenario – Coastal Insurance System: A customer calls an insurance clerk at the insurance company and gives his/her policy number. The clerk enters this information, and the system displays the basic insurance policy. The clerk then checks the information to make sure the premiums are current and the policy is valid.

The customer gives the details of the car to be added. The clerk enters this information, and the system ensures that the given data is valid. Next, the customer selects all the types of insurance coverage desired and the amount for each. The clerk enters the information, and the system records each coverage type and validates the requested amount against the policy limits. After all of the coverages have been entered, the system validates the total coverage against all policy limits. If the validation is not successful, the process returns to the selection of coverage types and amounts. If the validation is successful the process proceeds and the system updates the policy, calculates a new premium amount, and prints the updated policy statement.

Based on the scenario above, prepare a **Activity Diagram** for the *Update Policy* Use Case of the Coastal Insurance System.

Question 6

[15 marks]

An event table is a key tool used in systems analysis to document and understand business processes.

1. Describe the essential elements of an event table. In your answer describe what information each element should provide. (6)
2. What is the name of the technique for developing an event table? Also, outline the steps involved in drawing up an event table. (9)

[END OF PAPER]

REMOVE ANSWER SHEET AND INSERT INTO ANSWER BOOK

IFS224/E Answer Sheet

Student Number: _____

Name: _____

Multiple Choice Questions:

Place an X in the square corresponding to the answer to the question

Question	A	B	C	D
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8				
1.9				
1.10				

1.11				
1.12				
1.13				
1.14				
1.15				
1.16				
1.17				
1.18				
1.19				
1.20				

True/False Questions:

Place an X in the square corresponding to the answer to the question

Question	True	False
1.21		
1.22		
1.23		
1.24		
1.25		
1.26		
1.27		
1.28		
1.29		
1.30		

