

SIR ARTHUR LEWIS COMMUNITY COLLEGE
ENGINEERING AND THE CIRCULAR ECONOMY
ACADEMIC YEAR (2024/2025) - SEMESTER ONE
END OF SEMESTER ALTERNATE EXAMINATION

TUTOR(S) : Miss Kem Emmanuel
PROGRAMME TITLE : Computer Information Technology
COURSE TITLE : Information Systems
COURSE CODE : CMP205
LEVEL : Associate Degree/ Year One
PAPER : One
DATE : Wednesday, 15th January 2025
COMMENCEMENT TIME : 1:00p.m.
DURATION : Two (2) Hours
INVIGILATOR(S) :
ROOM(S) : UWI-0R-01

GENERAL INFORMATION AND INSTRUCTIONS

- **This Paper contains Three (3) Sections. You are required to answer all questions**
- **Section A** contains twenty- five (25) multiple choice questions. One mark is awarded for each correct answer.
- **Section B** contains ten (10) short answer questions. Marks are awarded accordingly
- **Section C** contains three (3) long answer questions. You are required to **answer Question 1 and either Question 2 or 3**. Marks are awarded accordingly.
- Students must sign **IN** and **OUT** on the examination class list.
- Students must not write their names on their answer sheets, only their ID number
- Please number your responses accurately.
- **Note: Bags, Books as well as writing paper not given by the invigilator should be deposited at the front of the examination room or as otherwise indicated.**
- **All cell phones must be turned off during the exam**

**DO NOT TURN THIS COVER SHEET UNTIL
YOU ARE TOLD TO DO SO!!!**

Section A: Multiple Choice Questions

(Choose the most appropriate answer. One mark is awarded for each correct answer.)

1. Which of the following OSI layers interacts directly with the Transport Layer to ensure reliable data transmission and is responsible for segment reassembly?
 - (A) Network Layer
 - (B) Data Link Layer
 - (C) Application Layer
 - (D) Session Layer

2. In the OSI model, which of the following is a primary function of the Presentation Layer, and why is it critical for cross-platform communication?
 - (A) Data encapsulation to match specific application formats
 - (B) Data format translation and encryption to ensure compatibility across different Systems
 - (C) Error detection and flow control to manage network congestion
 - (D) Routing data packets to determine optimal paths

3. Which layer is responsible for logical addressing, which involves assigning unique identifiers to devices and directing data packets based on these addresses?
 - (A) Transport Layer
 - (B) Data Link Layer
 - (C) Network Layer
 - (D) Physical Layer

4. At which layer of the OSI model do routers operate, and what is the primary role they serve at this layer?
 - (A) Network Layer; managing electrical signals and connections
 - (B) Data Link Layer; managing MAC addresses and facilitating direct device-to-device communication
 - (C) Network Layer; directing data packets based on IP addresses and determining optimal routes
 - (D) Data Link Layer; handling connection setup and termination

5. Which characteristic of quality information ensures that information can be easily accessed by authorized users at the right time and in the right format?
 - (A) Accurate
 - (B) Accessible
 - (C) Reliable
 - (D) Verifiable

6. Which of the following symbols in a Use Case Diagram represents the relationship where a use case has the functionality of another use case?
 - (A) Generalization
 - (B) Association
 - (C) <<extends>>
 - (D) <<includes>>

7. What does a Data Flow Diagram (DFD) Level 0 represent?
 - (A) An overview of the entire system as a single process
 - (B) A detailed representation of a single process within the system
 - (C) A breakdown of all data stores and external entities
 - (D) A high-level flow of data for all subprocesses

8. Which of the following best describes a "data store" in a DFD?
 - (A) A place where data is held temporarily during processing
 - (B) A process that transforms data from one format to another
 - (C) An external entity providing input data
 - (D) A repository where data is stored for retrieval and processing

9. Which of the following elements is typically not represented in a Swimlane Diagram?
 - (A) Roles or departments
 - (B) Data storage and retrieval
 - (C) Process steps
 - (D) Decision points

10. A tech company wants to enable their employees to connect devices wirelessly within a few meters, such as syncing mobile phones to laptops. Which network type should they implement?
 - (A) Local Area Network (LAN)
 - (B) Wide Area Network (WAN)
 - (C) Personal Area Network (PAN)
 - (D) Metropolitan Area Network (MAN)

11. Which network architecture would best suit an organization that requires high levels of data access speed, and needs to secure and restrict access within a city-based campus?
 - (A) Local Area Network (LAN)
 - (B) Metropolitan Area Network (MAN)
 - (C) Wide Area Network (WAN)
 - (D) Campus Area Network (CAN)

12. A government organization wants to improve its efficiency in processing citizen services. It plans to implement E-Government. Which of the following applications would align best with Government-to-Citizen (G2C) e-government initiatives?
- (A) Allowing local businesses to submit licensing requests online
 - (B) Creating an online portal for citizens to access social services and pay taxes
 - (C) Setting up a procurement system for government contractors
 - (D) Establishing a network for data sharing among government departments
13. An organization relies on Tactical Information for decision-making at the middle management level. Which of the following scenarios best illustrates the use of tactical information?
- (A) A team analyzes real-time sales data to monitor daily sales performance
 - (B) The CFO uses historical data to plan for long-term financial growth
 - (C) A regional manager compares sales trends to allocate budgets to different branches
 - (D) An HR officer processes payroll to ensure timely salary payments
14. An organization's frontline employees need to access Operational Information to monitor the day-to-day workflow. Which of the following is the best example of operational information?
- (A) An annual sales report to assess market performance over the past year
 - (B) Real-time data on current inventory levels to manage daily stock replenishment
 - (C) A five-year strategic plan for expanding business operations globally
 - (D) A comparison of potential funding sources for upcoming projects
15. Which type of information would a company most likely use if they are deciding whether to open a new branch in another country, assessing potential risks, and evaluating competitive positioning?
- (A) Operational Information
 - (B) Tactical Information
 - (C) Strategic Information
 - (D) Internal Information
16. During the System Development Life Cycle (SDLC) for an e-commerce platform, the project team is working on a design document outlining system architecture based on specified requirements. Which document will likely serve as their main reference for this stage?
- (A) Software Requirement Specification (SRS)
 - (B) Feasibility Report
 - (C) Logical Data Model
 - (D) User Manual

17. A software company is implementing an Agile Development Model. Which of the following is a key characteristic of this approach that differentiates it from the Waterfall Model?
- (A) It emphasizes fixed requirements and sequential development phases
 - (B) It uses frequent iterations to incorporate client feedback and make adjustments
 - (C) It requires completing all phases before any client involvement
 - (D) It eliminates the need for regular testing
18. After a recent malware attack, an organization decides to increase its network security using machine learning to detect abnormal traffic patterns. How does this approach benefit the organization?
- (A) It blocks all incoming data to prevent further attacks
 - (B) It provides real-time alerts on suspicious activity within the network
 - (C) It automatically encrypts all network data for enhanced security
 - (D) It creates backups of all network traffic for analysis
19. Social engineering is a major tactic used by cybercriminals. Which scenario best describes a social engineering attack?
- (A) A hacker uses malware to access sensitive data on a company's server
 - (B) A cybercriminal tricks an employee into disclosing login credentials via phone
 - (C) An attacker installs ransomware to block access to critical files
 - (D) An employee accidentally deletes files due to a system error
20. Which network topology connects all devices to a central hub or switch?
- (A) Bus Topology
 - (B) Star Topology
 - (C) Ring Topology
 - (D) Mesh Topology
21. Which one of the following is Cloud Platform by Amazon?
- (A) Azure
 - (B) AWS
 - (C) Google Cloud
 - (D) IBM cloud

22. Which type of network cable is commonly used for wired Ethernet connections and can transmit data at gigabit speeds?
- (A) Coaxial cable
 - (B) Fiber optic cable
 - (C) Twisted pair cable
 - (D) USB cable
23. Enhancements, upgrades, and bug fixes are done during the _____ step in the SDLC.
- (A) Maintenance and Evaluation
 - (B) Problem/Opportunity Identification
 - (C) Design
 - (D) Development and Documentation
24. Terminal which can't process any information is known as
- (A) Input/output terminal
 - (B) intelligent terminal
 - (C) dumb terminal
 - (D) smart terminal
25. _____ is a type of software designed to help the user's computer detect viruses and avoid them.
- (A) Malware
 - (B) Adware
 - (C) Antivirus
 - (D) Firewalls

Section B: Short Answer Questions

(You are required to answer **all** questions within this section.)

1. Define data and information. Explain the difference between the two. (3 marks)
2. What is the role of a SwimLane Diagram in data modeling? (2 marks)
3. Briefly describe TPS and how they assist in daily operations. (3 marks)
4. Explain the concept of Peer to Peer in networks. (3 marks)
5. How do Internet, Intranets and Extranets differ in organizational use? (3 marks)

6. Describe the TCP/IP model and its significance in networking. (3 marks)
7. Explain the concept of cloud computing listing the various types. (4 marks)
8. What is the Agile model, and how does it differ from the Big Bang model in the software development process? (4 marks)
9. What are CASE tools, and how do the Lower Case Tools support system development? (5 marks)
10. Explain the purpose of office automation and its significance in contemporary organizations. Identify and discuss three key characteristics that highlight its importance. (5 marks)

(Total 35 Marks)

Section C: Long Answer Questions

(You are required to answer Question 1 and **either** Question 2 **or** 3.)

Question One

A small business owner running an e-commerce website and keeping track of inventory, sales, and customer data. The business has been growing, and recently, the owner has realized that if something were to happen to the data whether from hardware failure, human error, cyberattack, or natural disaster everything can be lost. You've been hired as an IS consultant to assist the company.

- (A) As an Information Systems consultant, explain three different types of data backup mechanisms available. (3 marks)
- (B) Compare the various options for data backup, highlighting their strengths and weaknesses. (3 marks)
- (C) Propose an ideal backup plan for a month for the business, utilizing a combination of backup mechanisms. (4 marks)

(Each question below is worth ten (10) marks. You are required to answer only one.)

Question Two

Discuss the following types of information systems EIS, MIS, TPS used in organizations and explain how they meet different organizational needs. Include examples of each and highlight their roles in decision-making and operations.

OR

Question Three

Explain the different models and methodologies used in system development. Compare the classical methodologies like the Waterfall model and SDLC with modern methodologies such as the Spiral and Iterative models. Discuss the advantages and disadvantages of each approach.

END OF EXAMINATION!!!