

WEEK 6: MOCK EXAMINATION

This week is dedicated to a full-scale Mock SSCE Examination (Theory and Objective), held under official exam conditions. The questions below can serve as a new, full-length sample paper.

MOCK EXAMINATION (SAMPLE PAPER)

SECTION A: OBJECTIVE (Answer all)

- 1. The "3-2-1 Rule" is a best practice for:** (A) SDLC (B) Network Security (C) Data Backup (D) OOP
- 2. In OOP, a function that belongs to a class is called a(n):** (A) Attribute (B) Method (C) Instance (D) Variable
- 3. Which protocol is "unreliable" but fast, making it ideal for video streaming?** (A) TCP (B) UDP (C) HTTP (D) FTP
- 4. A technician building a high-end gaming PC will plug the GPU into which slot?** (A) PCI (B) PCIe x1 (C) PCIe x16 (D) SATA
- 5. Which of the following is *not* a "Big Three" component of the CIA Triad?** (A) Confidentiality (B) Authentication (C) Integrity (D) Availability

SECTION B: THEORY/ESSAY (Answer 3 questions)

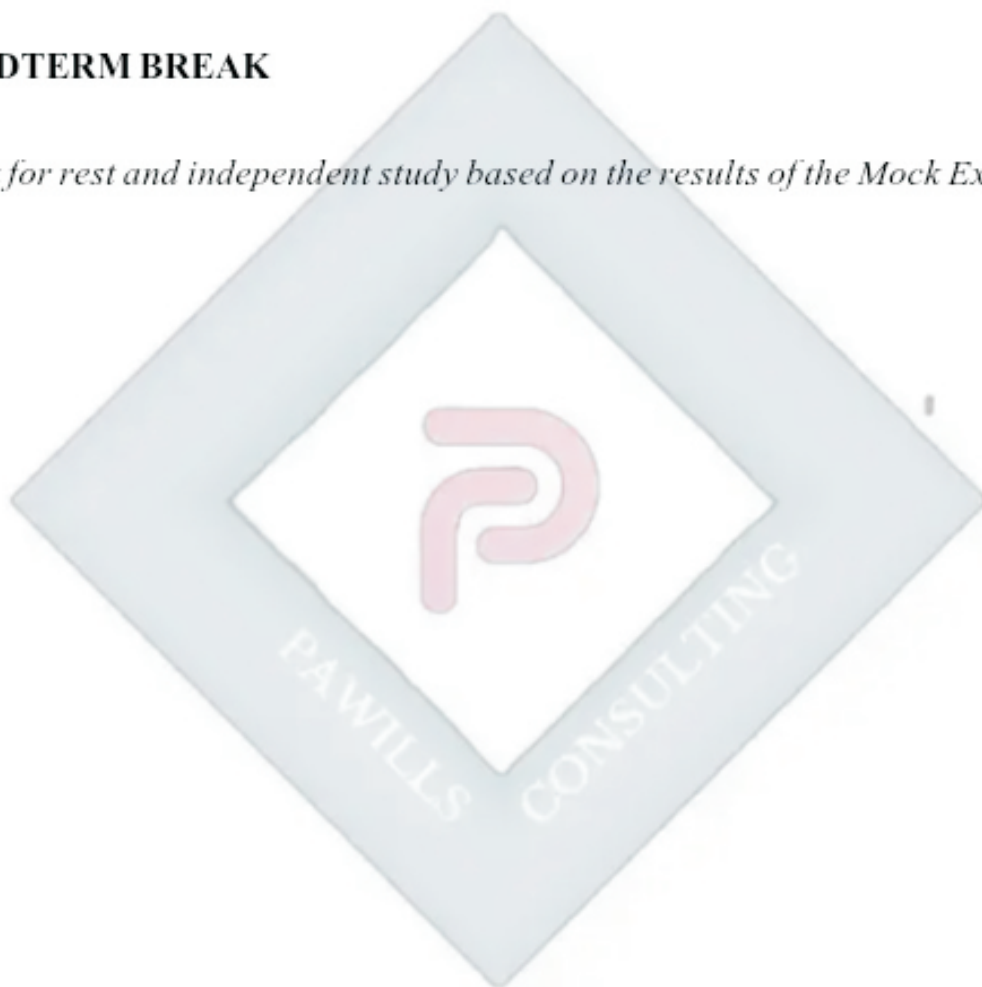
- Q1. (a) What is the "Internet of Things" (IoT)? (b) List and describe the four (4) essential components of any IoT system. (c) Give one (1) practical example of an IoT application.**
- Q2. (a) Define "Malware" and list three (3) common types. (b) What is a "Phishing Attack"? (c) As a technician, explain three (3) "Prevention" strategies you would teach a client to keep their PC secure.**
- Q3. (Case Study) A client wants to upgrade their 5-year-old laptop. It is very slow to boot up, and they can't run many programs at once. The laptop currently has a 500GB HDD**

and 4GB of DDR3 RAM. (a) Identify the two (2) main hardware "bottlenecks" causing the problems. (b) Propose a two-part *hardware upgrade* plan to solve these issues. (c) Explain the *specific type* of RAM the client must buy (hint: form factor and type). (d) Explain the two (2) options the client has for getting their Windows OS onto the new drive.

Q4. (a) Differentiate between "IaaS," "PaaS," and "SaaS" cloud computing models. (b) Give one (1) commercial example of each. (c) What is the relationship between "Virtualization" and "Cloud Computing"?

WEEK 7: MIDTERM BREAK

This is a break for rest and independent study based on the results of the Mock Examination.



WEEK 8: SSCE PREPARATION (FINAL EXAM-FOCUSED REVIEW)

8.1 EXAM DAY STRATEGY

1. **Arrive Early:** Be calm, have your tools (pen, pencil, ID).
2. **Read the Instructions:** *Always*. How many questions to answer? From which sections?
3. **Time Management (The "Clock"):**
 - Divide your time. (e.g., 60 mins for 50 Objectives = ~1 min per question. 90 mins for 3 Essays = 30 mins per essay).
 - *Stick to your time!* Do not spend 45 minutes on one essay.
 - Answer the questions you know *first*.

8.2 OBJECTIVE STRATEGY

- **Process of Elimination:** Instantly cross out the 2 "stupid" answers.
- **Read the Question:** Look for "NOT" or "EXCEPT." (e.g., "All of the following are malware EXCEPT...").
- **No Blanks:** Answer *every* question, even if you have to guess.

8.3 THEORY/ESSAY STRATEGY (THE "VERB")

Your answer *must* match the "verb" in the question.

- **"LIST..." / "STATE...":** (e.g., "List 4 malware types").
 - **Answer:** 1. Virus, 2. Worm, 3. Trojan, 4. Ransomware.
 - DO NOT write an essay. You are wasting time.
- **"DEFINE...":** (e.g., "Define VPN").
 - **Answer:** "A VPN is a Virtual Private Network, which is a technology that creates a secure, encrypted connection (a 'tunnel') over a public network (the internet)."
- **"EXPLAIN..." / "DISCUSS..." / "DESCRIBE...":** (e.g., "Explain the 4 pillars of OOP").
 - This is where you get your marks. Use the **D-E-E** method:
 - **Define:** "Encapsulation is the bundling of data (attributes) and methods..."

WEEK 2: PAST QUESTION DRILLS (WAEC/NECO)

2.1 INTRODUCTION

This week is pure practice. We will apply the consolidated knowledge from Week 1 to SSCE-style questions.

2.2 OBJECTIVE QUESTIONS (SAMPLE)

- 1. A developer is creating a software project where the client's requirements are expected to change frequently. Which SDLC model is most appropriate? (A) Waterfall (B) Agile (C) Spiral (D) V-Model**
- 2. Which of the following SQL commands is part of the Data Manipulation Language (DML)? (A) CREATE (B) DROP (C) UPDATE (D) ALTER**
- 3. A user's computer is on, but the screen is dark. A faint image is visible when a torch is shined on the screen. What component has likely failed? (A) The GPU (B) The Backlight (C) The RAM (D) The LCD (Liquid Crystal)**
- 4. A technician is upgrading a laptop. Which type of RAM module will they use? (A) DIMM (B) EDO-RAM (C) SO-DIMM (D) VRAM**
- 5. What is the primary function of a DHCP server on a network? (A) To block viruses and malware. (B) To translate domain names (like <https://www.google.com/search?q=google.com>) into IP addresses. (C) To automatically assign IP addresses to devices. (D) To encrypt all network traffic for security.**
- 6. A client wants a storage solution that is silent, durable, and has the fastest possible boot time for their OS. The technician should recommend: (A) A 7200RPM HDD (B) A 5400RPM HDD (C) A SATA SSD (D) An NVMe M.2 SSD**



7. A user finds all their documents have been renamed with a ".locked" extension text file is demanding Bitcoin. This is an example of: (A) A Virus (B) A Worm (C) (D) Ransomware

8. In OOP, a class Car has a property called self.color. This self.color is an: (A) Method (B) Object (C) Attribute (D) Function

9. Gmail and Netflix are examples of which cloud computing service model? (A) IaaS (Infrastructure as a Service) (B) PaaS (Platform as a Service) (C) SaaS (Software as a Service) (D) FaaS (Function as a Service)

10. A user types ipconfig and sees an IP address of 169.254.100.50. What does this indicate? (A) The PC has a valid public IP address. (B) The PC is on the 169.254 network. (C) The PC has failed to get an address from the DHCP server. (D) The PC's network adapter has failed.

(Answers: 1-B, 2-C, 3-B, 4-C, 5-C, 6-D, 7-D, 8-C, 9-C, 10-C)

2.3 THEORY / ESSAY QUESTIONS (SAMPLE)

Question 1: Networking & Security (a) Define the following terms: (i) Firewall (ii) VPN (Virtual Private Network) (iii) The "CIA" Triad of Security (b) A client's home Wi-Fi is slow. List four (4) possible causes a technician should investigate.

Question 2: Hardware & Troubleshooting (a) What is the "POST" of a computer? (b) Differentiate between an SSD and an HDD. (c) A client wants to upgrade their PC's Graphics Card (GPU). List the three (3) *critical* compatibility factors the technician must check *before* recommending a new card.

Question 3: Database (Case Study) A school needs to create a database. They want one table to hold student information and another to hold their subject choices. (a) Write the SQL CREATE TABLE command for a Students table with the following columns: * StudentID (an integer, it should be the primary key) * FirstName (text, up to 50 characters) * LastName (text, up to 50 characters) * DateOfBirth (a date) (b) Write the SELECT query that would show *only* the FirstName and LastName of all students in the Students table.

EVALUATION (WEEK 2)

1. Attempt all 10 objective questions.
2. Choose two (2) of the three theory questions and write a full-page answer for each, following the "Define, Explain, Example" structure.

ASSIGNMENT (WEEK 2)

1. Write a full answer to the Theory Question you *did not* choose for the evaluation.
2. Create three (3) new objective questions of your own, based on the SS3 syllabus.



WEEK 3: PRACTICAL PROJECT I (WEBSITE/DATABASE)

3.1 PROJECT BRIEF: "MY SCHOOL PORTAL"

Objective: To design the *prototype* for a simple, functional school portal. This project will combine your skills in web design (HTML/CSS/JS) and database management (SQL).

Project Components:

1. **The Database (The "Backend"):** The database (e.g., MySQL or SQLite) will store the information.
2. **The Website (The "Frontend"):** The HTML/CSS pages that the user interacts with.
3. **The Logic (The "Brain"):** The JS or server-side code that connects the frontend to the backend.

3.2 PART 1: THE DATABASE DESIGN

First, we must design the "schema" for our database. We will need two tables.

Table 1: Students

- This table holds the student's login and personal info.
- **SQL CREATE TABLE Command:**
- CREATE TABLE Students (
 - StudentID VARCHAR(10) PRIMARY KEY,
 - Password VARCHAR(255) NOT NULL,
 - FirstName VARCHAR(100),
 - LastName VARCHAR(100),
 - Class VARCHAR(10)
-);

Table 2: Results

- This table holds the grades, linked by the StudentID.

- **SQL CREATE TABLE Command:**
- CREATE TABLE Results (
- ResultID INT AUTO_INCREMENT PRIMARY KEY,
- StudentID VARCHAR(10),
- Subject VARCHAR(50),
- TestScore INT,
- ExamScore INT,
- FOREIGN KEY (StudentID) REFERENCES Students(StudentID)
-);

3.3 PART 2: THE WEBSITE (FRONTEND)

You will create two HTML files.

File 1: login.html (The Login Page)

- **HTML:** Needs a simple form with:
 - A text input for StudentID.
 - A password input for Password.
 - A "Login" button.
- **CSS:** Style the form to be centered, clean, and professional.

File 2: portal.html (The Dashboard)

- This is the page the user sees *after* logging in.
- **HTML:**
 - A "Welcome, [Student Name]" section.
 - A section for "My Details" (FirstName, LastName, Class).
 - A large table with headings: Subject, Test Score, Exam Score.
- **JavaScript:**
 - You will "mock" the login.
 - Write a JS function for the "Login" button.
 - If StudentID = "SS3-001" and Password = "1234", then redirect to portal.html.

- In portal.html, write JS to *dynamically* fill in the table with "dummy" data (e.g., "Maths - 30 - 55"). This simulates fetching data from the database.

3.4 DELIVERABLES (WHAT TO SUBMIT)

1. A text file (schema.sql) containing your two CREATE TABLE commands.
2. Your login.html file (with HTML, CSS, and JS).
3. Your portal.html file (with HTML, CSS, and JS).
4. (Optional) A simple "Home Page" (index.html) that links to the login page.
5. A 1-page report explaining how your system *would* work in a real-world scenario (e.g., how the JS would use fetch() to call a server, which would then run the SQL SELECT query).

EVALUATION (WEEK 3)

1. Complete the database design (schema.sql).
2. What is a PRIMARY KEY in SQL?
3. What is a FOREIGN KEY, and why is it used in the Results table?

ASSIGNMENT (WEEK 3)

1. Begin building the login.html and portal.html files. Focus on making them clean and responsive (use Media Queries!).
2. (Bonus) Add a simple JavaScript logout() function to the portal.html page that redirects the user back to login.html.

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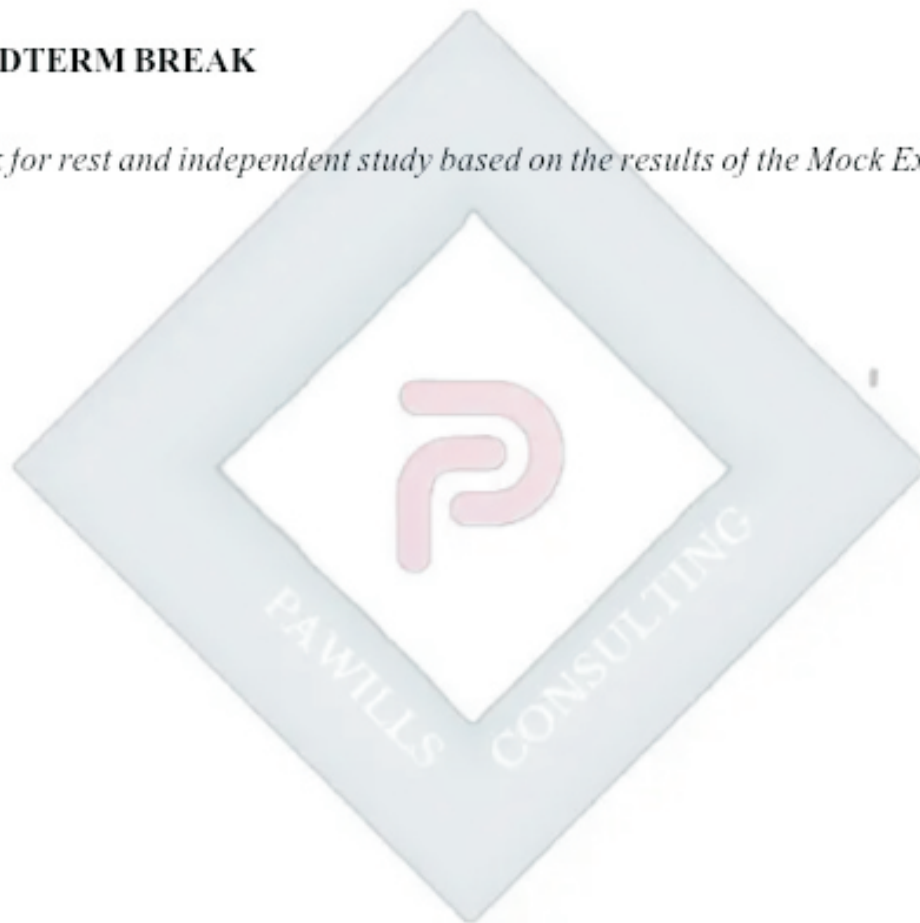
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 - **Define:** "Encapsulation is the bundling of data (attributes) and methods..."

- **Explain:** "It hides the internal complexity of an object..."
- **Example:** "A car is encapsulated; you use the steering wheel (method) without knowing how the engine (attributes) works."

8.4 FINAL "CRAM" CHECKLIST: TOP 20 MUST-KNOW CONCEPTS

1. **OOP:** Class, Object, Attribute, Method.
2. **SDLC:** 6 Phases (Plan, Design, Implement, Test, Deploy, Maintain).
3. **SDLC Models:** Waterfall (rigid) vs. Agile (flexible).
4. **SQL DML:** SELECT, INSERT, UPDATE, DELETE.
5. **SQL DDL:** CREATE TABLE.
6. **HTML/CSS/JS:** Structure / Style / Behaviour.
7. **Responsive Design:** Using @media queries.
8. **Network Protocols:** TCP (reliable) vs. UDP (fast), DHCP (auto-IP).
9. **Network Security:** CIA Triad (Confidentiality, Integrity, Availability).
10. **VPN:** "Encrypted tunnel."
11. **Malware:** Virus, Worm, Trojan, Ransomware.
12. **Phishing:** A "trick" email.
13. **Storage:** HDD (mechanical) vs. SSD (flash).
14. **Hardware Upgrade:** Upgrading RAM (DIMM/SO-DIMM) or GPU (check PSU, size).
15. **Troubleshooting:** POST/Beep Codes (Hardware), BSOD (Software/RAM).
16. **Network Test:** ipconfig, ping (Gateway vs. 8.8.8.8 vs. <https://www.google.com/search?q=google.com>).
17. **Cloud:** IaaS, PaaS, SaaS (Gmail).
18. **Virtualization:** A "Hypervisor" runs a "VM."
19. **IoT:** 4 Components (Sensor, Connectivity, Processing, UI).
20. **Data Backup:** 3-2-1 Rule.

EVALUATION / ASSIGNMENT (WEEK 8)

1. Go through the "Top 20" list.
2. Find the three (3) topics you feel *least* confident about.