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CERTIFICATE UNIVERSITY EXAMINATIONS
SCHOOL OF SCIENCE AND TECHNOLOGY (SST)
CERTIFICATE IN INFORMATION COMMUNICATION
TECHNOLOGY

CIT 105: FOUNDATIONS OF COMPUTER ORGANIZATION

DATE: 29TH JULY 2026

DURATION: 2 HOURS

**MAXIMUM
MARKS: 70**

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX [6]** questions.
4. Question **ONE** is compulsory.
5. Answer any other **FOUR** questions.
6. Question **ONE** carries **30 MARKS** and the rest carry **10 MARKS** each.
7. Write all your answers in the Examination answer booklet provided.

QUESTION ONE

Read the Case Study below carefully and answer the questions that follow:

SmartTech Innovations Ltd is a fast-growing electronics company that recently modernized its computing infrastructure. The organization replaced its outdated standalone computers with a networked client-server system supported by Windows 11, Ubuntu Linux, and Android tablets. The new setup allows employees to collaborate, share files, and access centralized applications such as inventory management and customer support.

However, frequent system slowdowns have been observed when multiple users access shared resources simultaneously. The IT department suspects issues related to process scheduling, memory management, and CPU utilization. Additionally, some employees install unauthorized software, leading to security breaches and malware infections.

To address these issues, the IT manager has introduced cloud storage, automated updates, and AI-based system monitoring tools that detect unusual activity in real time. Staff members are being trained on ethical computing practices, data privacy, and safe handling of organizational data.

As part of its future strategy, SmartTech plans to integrate IoT devices, machine learning, and automated repair diagnostics to enhance system performance and reduce downtime.

Required:

- a) Explain three advantages of using a centralized client-server system over standalone computer. **[5 marks]**
- b) Describe how CPU scheduling algorithms can help improve performance when multiple users access shared resources. **[5 marks]**

- c) Discuss three security risks SmartTech faces from unauthorized software installation and how these can be prevented.

[5 marks]

- d) Explain the role of the operating system in managing memory and processes within the company's computers.

[5 marks]

- e) Analyze the importance of ethical and legal computing practices in ensuring data privacy and system integrity.

[5 marks]

- f) Discuss how emerging technologies such as AI, IoT, and cloud computing can support SmartTech's maintenance and performance goals.

[5 marks]

QUESTION TWO

- a) Classify computers according to size and capability, giving real-world examples of each type.

[5 marks]

- b) Explain how modern computer architecture [e.g., multi-core processors and SSDs] has enhanced computer performance and energy efficiency.

[5 marks]

QUESTION THREE

- a) Distinguish between system software and application software, providing two examples of each.

[4 marks]

- b) Discuss three main functional units of a computer system and explain their interrelationship in data processing.

[6 marks]

QUESTION FOUR

- a) Describe three common causes of deadlocks in an operating system and propose measures to prevent them.

[5 marks]

- b) Explain the difference between a process and a thread, giving examples of how concurrency improves CPU performance.

[5 marks]

QUESTION FIVE

- a) Discuss three CPU scheduling algorithms and explain how each determines process execution order.

[6 marks]

- b) Explain two memory management techniques that operating systems use to optimize system performance.

[4 marks]

QUESTION SIX

- a) Discuss three preventive maintenance practices that can help reduce system failure and prolong computer lifespan.

[5 marks]

- b) Analyse two ethical or legal issues related to the use of pirated or unlicensed software in an organization.

[5 marks]