SMARTWIZ

GRADE10 COMPUTER APPLICATIONS TECHNOLOGY (CAT) EXAM

MARKS: 100

MARKS	

TIME: 2 hours

SCHOOL _____

CLASS (e.g. 4A) _____

SURNAME _____

NAME _____

Instructions for Learners:

- Read all the instructions carefully before you begin the exam.
- Write your name and learner number clearly on the answer sheet/booklet.
- Answer all the questions unless otherwise instructed.
- Show all your work/calculations where applicable.
- Write neatly and legibly.
- Use only blue or black ink. *Do not use correction fluid or tape.*
- No electronic devices (calculators, phones, etc.) are allowed unless explicitly permitted.
- Raise your hand if you have any questions.
- Do not talk to other learners during the exam.
- Any form of cheating will lead to disqualification.

This test consists of 6 pages including the cover page.

SECTION A: THEORY (50 marks)

Answer all questions.

1. **Define the following terms:**
   a) Hardware (2 marks)
   b) Software (2 marks)
   c) Operating System (3 marks)
2. **List four input devices and briefly describe the purpose of each.** (8 marks)

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3. **Explain the difference between volatile and non-volatile memory. Provide one example of each.** (6 marks)

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4. **What is the function of the CPU? Describe its two main components.** (6 marks)

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5. **Explain the difference between system software and application software. Give two examples of each.** (8 marks)

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6. **List and explain four types of network topologies.** (8 marks)

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7. **What is cloud computing? List three advantages of using cloud services.** (5 marks)

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8. **Explain the term 'phishing' and describe two ways to protect yourself from it.** (5 marks)

SECTION B: SPREADSHEETS (25 marks)

Use the table below for questions 1-5.

Employee Name	Hours Worked	Hourly Rate (R)	Overtime Hours	Overtime Rate (R)
John Smith	40	75	5	100
Maria Gomez	38	80	8	120

1. Write a formula to calculate the **regular pay** (Hours Worked × Hourly Rate) for John Smith in cell E2. (3 marks)

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2. Write a formula to calculate **overtime pay** (Overtime Hours × Overtime Rate) for Maria Gomez in cell F3. (3 marks)

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3. Write a formula to calculate **total pay** (regular pay + overtime pay) for John Smith in cell G2. (3 marks)

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4. Explain the purpose of **absolute cell referencing** and provide an example of how it might be used in the spreadsheet. (6 marks)

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5. Describe how you would create a **bar chart** to display the total pay of employees. (5 marks)

SECTION C: DATABASES (15 marks)

1. Define the following terms:
   a) Field (2 marks)
   b) Record (2 marks)
   c) Primary key (3 marks)
2. List three advantages of using a database instead of a spreadsheet for storing large amounts of data. (6 marks)

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3. Explain what a **query** is and how it can be used in a database. (2 marks)

SECTION D: INTERNET AND NETWORKING (10 marks)

1. What is an IP address? (2 marks)

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2. Explain the difference between LAN and WAN. (4 marks)

3. List two examples of internet services and describe their uses. (4 marks)

SECTION E: ETHICS AND COMPUTER SAFETY (5 marks)

1. What is copyright, and why is it important in the digital world? (3 marks)

2. List two ways to keep your computer safe from viruses. (2 marks)

End of Exam

TOTAL : 100

MEMO

SECTION A: THEORY (50 marks)

1. **Definitions:**
   a) Hardware – The physical components of a computer system. (2 marks)
   b) Software – Programs and operating information used by a computer. (2 marks)
   c) Operating System – Software that manages hardware resources and provides services for computer programs. (3 marks)
2. **Input devices and descriptions:** (8 marks, 2 marks each)

- Keyboard: Used to input text and commands.
- Mouse: Pointing device to interact with graphical interface.
- Scanner: Converts physical documents/images into digital form.
- Microphone: Captures sound and inputs audio data.

3. **Volatile vs Non-volatile memory:** (6 marks)

- Volatile memory loses data when power is off (e.g., RAM). (3 marks)
- Non-volatile memory retains data without power (e.g., Hard drive). (3 marks)

4. **Function of CPU and main components:** (6 marks)

- CPU executes instructions and processes data. (2 marks)
- Components:
  - ALU (Arithmetic Logic Unit): Performs calculations and logical operations. (2 marks)
  - Control Unit: Directs operations of the processor. (2 marks)

5. **System software vs Application software:** (8 marks)

- System software: Software that manages hardware and system operations (e.g., Operating System, Device Drivers). (4 marks)
- Application software: Software designed for end users to perform specific tasks (e.g., Word Processor, Web Browser). (4 marks)

6. **Network topologies:** (8 marks)

- Star: All nodes connected to a central hub.
- Bus: All devices connected to a single communication line.
- Ring: Each device connected to two others forming a ring.
- Mesh: Devices interconnected with multiple paths.
  (Each description 2 marks)

7. **Cloud computing and advantages:** (5 marks)

- Cloud computing: Using remote servers hosted on the internet to store, manage, and process data. (2 marks)
- Advantages:

- Access data anywhere with internet. (1 mark)
- Scalability of resources. (1 mark)
- Cost efficiency (no need for own servers). (1 mark)

8. **Phishing and protection:** (5 marks)

- Phishing: Fraudulent attempt to obtain sensitive information by pretending to be trustworthy. (2 marks)
- Protection:
  - Do not click suspicious links/emails. (1.5 marks)
  - Use updated antivirus software. (1.5 marks)

SECTION B: SPREADSHEETS (25 marks)

1. **Regular pay formula (John Smith, E2):**
   = B2 * C2 (3 marks)
2. **Overtime pay formula (Maria Gomez, F3):**
   = D3 * E3 (3 marks)
3. **Total pay formula (John Smith, G2):**
   = E2 + F2 (3 marks)
4. **Absolute cell referencing explanation and example:** (6 marks)

- Absolute referencing keeps a cell reference constant when copying formulas. (3 marks)
- Example: C1 used to fix Hourly Rate when calculating multiple employees' pay. (3 marks)

5. **Creating a bar chart steps:** (5 marks)

- Select data range including employee names and total pay. (1 mark)
- Insert > Chart > Bar chart option. (1 mark)
- Add chart title and labels. (1 mark)
- Format axes appropriately. (1 mark)
- Review chart for accuracy. (1 mark)

SECTION C: DATABASES (15 marks)

1. **Definitions:**
   a) Field – A single piece of data/category in a database (e.g., Name). (2 marks)
   b) Record – A complete set of fields representing one entity (e.g., one employee's data). (2 marks)
   c) Primary key – A unique identifier for each record in a table. (3 marks)
2. **Advantages of databases over spreadsheets:** (6 marks)

- Can handle large amounts of data efficiently. (2 marks)
- Support complex queries and reports. (2 marks)
- Data integrity and consistency. (2 marks)

3. **Query explanation and use:** (2 marks)

- A query is a question/request to retrieve specific data from a database. (1 mark)
- Used to filter, sort, or extract relevant information. (1 mark)

SECTION D: INTERNET AND NETWORKING (10 marks)

1. **IP address:** (2 marks)

- A unique numerical label assigned to each device on a network for identification and communication.

2. **Difference between LAN and WAN:** (4 marks)

- LAN (Local Area Network): Network limited to a small geographic area like a home or office. (2 marks)
- WAN (Wide Area Network): Network spanning large geographic areas, e.g., the internet. (2 marks)

3. **Examples of internet services and uses:** (4 marks)

- Email: Sending/receiving messages electronically. (2 marks)
- World Wide Web (WWW): Accessing information and multimedia content. (2 marks)

SECTION E: ETHICS AND COMPUTER SAFETY (5 marks)

1. **Copyright and importance:** (3 marks)

- Copyright protects creators' rights over their original work. (1 mark)
- Important to prevent unauthorized use or copying of digital content. (2 marks)

2. **Two ways to keep computers safe from viruses:** (2 marks)

- Install and update antivirus software regularly. (1 mark)
- Avoid downloading files or clicking links from unknown sources. (1 mark)

End of Marking Memorandum

TOTAL : 100