Name: ________________________________                Class: ________________

Directions to Candidates:

Answer ALL questions in Section A on this paper;
Answer BOTH questions from Section B on separate foolscaps;
The use of flow chart template is permitted;
Calculators are NOT allowed;
Good English and orderly presentation are important.

For office use only:

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
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<th>Paper Total</th>
<th>Course Work</th>
<th>Final Mark</th>
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Section A - Answer all Questions

1 (a) Data verification may be used during the input of data. What is it used for?

Use of verification: ________________________________


(b) Check digits and range checks are two types of validation checks.
    i. Are validation checks done by the computer or by a clerk?
    ii. Give an example of where check digits are usually found.
    iii. What is a range check?
    iv. Give an example where a range check can be suitable.

i. Computer or clerk: ________________________________

ii. Example: ________________________________

iii. Range check: ________________________________

iv. Example: ________________________________

2 Below are a logic circuit and its incomplete truth table. The circuit has two circles which represent two logic gates.

(a) Study the circuit and the truth table. Then write the name of the logic gates in the circles.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
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</table>

(b) Complete the truth table to match the logic circuit.
3. (a) Convert the binary number 1011 0011 to:
   i. Decimal; and
   ii. Hexadecimal.

   Working space:

   Decimal: ____________________________________________
   Hex: ____________________________________________  [2]

   (b) What is the minimum number of bits required to store a character set made up of only the English alphabet (26 letters) both in capital and small letters?

   Minimum number of bits: ____________________________________________  [1]

   (c) Write down whether the following are true or false.

   i. Numerical overflow is when a number does not fit in a page.
   ii. A register is a temporary storage area of, say, 8 bits.

   True or false: ____________________________________________  [2]

4. (a) Application packages may be off-the-shelf, customisable or tailor-made. Give one advantage of each type of package when compared to the others.

   Off-the-shelf: ____________________________________________
   Customisable: ____________________________________________
   Tailor-made: ____________________________________________  [3]

   (b) You have bought an application together with its software licence. What does software licence mean?

   Software licence: ____________________________________________  [1]

   (c) Continue the following sentence:

   Software NOT requiring a software licence is called ____________________________  [1]
5 (a) The following are four items of information that are found in either the user documentation or the program documentation.

<table>
<thead>
<tr>
<th>Flowcharts</th>
<th>How to input data</th>
<th>Backing up</th>
<th>Test data used</th>
</tr>
</thead>
</table>

In the table below write down where you expect to find these four items of information.

<table>
<thead>
<tr>
<th>User documentation</th>
<th>Program documentation</th>
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</table>

(b) Besides the user and program documentation of part (a) above, what is the other type of documentation called?

   Other type of documentation: ____________________________________________________________________________

6 (a) Syntax and logical errors are two types of programming errors.

   i. Explain the difference between the two types of errors.
   ii. For each type of error give an example.

   Syntax: ____________________________________________________________________________________________
   Example: __________________________________________________________________________________________
   Logical: ___________________________________________________________________________________________
   Example: __________________________________________________________________________________________

(b) What does dry running a program mean?

   Dry run: __________________________________________________________________________________________

7 (a) The CPU is made up of two subunits.

   i. What does CPU stand for?
   ii. Write down the names of the two subunits of the CPU.
   iii. Write the name and the function of one register that may be found in either subunit.

   CPU: ___________________________________________________________________________________________
   Subunit 1: _______________________________________________________________________________________
   Subunit 2: _______________________________________________________________________________________
8 (a) **POS** and **CAM** are two acronyms used for computer applications. What does each acronym stand for?

**POS:**

**CAM:**

(b) **CAD**, **CAL** and **Stock control** are other computer applications. Write down the application that is typically used by each of the following persons.

**Teacher:**

**Shop owner:**

**Architect:**

9 (a) Programming languages may be divided into **Low-Level Languages (LLL)** and **High-Level Languages (HLL)**.

i. Write down two **differences** between the two levels of languages.

ii. Mention one **example** of a LLL and another of a HLL.

1st Difference:

2nd Difference:

LLL example:

HLL example:

(b) Use **ONE** of the following words to complete the sentence below.

Memory     Disk     Keyboard

The fetch execute cycle is the method used by the CPU to bring an instruction from the ________________ and then obey it.

10 (a) Write one **statement** in Pascal for each of the following:

i. To store the **product** of variables **A** and **B** in variable **X**.

ii. To store the **remainder** of variable **E** divided by **F** in variable **Y**.

i:

ii:
(b) Write statements in Pascal to do the following:
    Input a person’s age from the keyboard. If the age is greater than or equal to 18, a
    conditional instruction will display ‘You have a driving licence’ otherwise
    display ‘You cannot drive’.

(c) What is the name given to instructions in a program that have to be repeatedly
    executed a number of times?
    Repetition: ________________________________

    11
    i. What is the difference between WWW and the Internet?
    ii. Mention two risks when using the Internet.
    iii. What is e-government?

    Difference: ________________________________

    1st Risk: ________________________________

    2nd Risk: ________________________________

    e-government: ________________________________

Section B – Answer BOTH Questions

12 (a) The following are the names of the seven stages of Systems Analysis:
    Project selection and feasibility study
    Present system study and analysis
    Design of new system
    Programming and documentation
    Implementation and changeover
    Control and review
    System maintenance

    Write down the name of the stage in which the following tasks are done:
    i. Drawing the flowcharts to solve the problem.
    ii. Installing the new computerised system.
iii. Knowing what the problem with the present system is.
iv. Updating the new system.
v. Checking that the new system is working as it should.
vi. Preparing the user specifications.
vii. Converting the flowcharts into programs.

(b) Feasibility study is carried out very early during systems analysis.
   i. What is the advantage of doing the feasibility study early?
   ii. Mention one item of hardware whose cost must be considered during this study.

(c) Name two different methods that may be used to know how the present system is working.

(d) Straight changeover or parallel changeover may be used during systems analysis.
   i. What is meant by changeover?
   ii. Explain the difference between the two changeovers mentioned above.
   iii. Which of the two changeovers would you suggest for a very small shop?

13 The symbols of the following flowchart have been numbered for reference.
Study the flowchart and then answer the questions below

1. Start
2. N = 3, V = 39
3. Print N
4. N = N + 3
5. N = V?
6. Stop

i. Symbols 1 and 6 are called terminal symbols. What are the symbols numbered 2, 3 and 5 called?
ii. Part of the flowchart forms a loop. Write down the numbers of the symbols that form the loop.
iii. Symbol 3 prints a number on the screen. What **number** is printed on the first run through the loop? [1]

iv. Write the **new instruction** if variable N has to be increased by 5 each time the loop is obeyed. [2]

v. Symbol 2 assigns two numbers to two variables. What is this **process** called? [2]

vi. Below is the incomplete program for the above flowchart. The missing items are marked by black boxes. Copy the program, replacing the boxes with the **proper items**.

```
Program annual;

Var
    N, V : □;

Begin
    N := 3;
    □;
    Repeat
        Writeln( □);
        N := N + 3;
        □ N = V;
        □.
```

[5]