FORM 5 (Option)  COMPUTER STUDIES  TIME: 1h 45min

Name: ____________________________________________                Class: ________________

Directions to Candidates:

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

For office use only:

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<thead>
<tr>
<th>Question</th>
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Section A - Answer all Questions

1 Write whether the following statements are True (T) or False (F):
   i. A general-purpose computer is intended to do one task only: ______________________
   ii. Mobile phones are considered as general-purpose computers: ______________________
   iii. An embedded system is a computer system designed to do one or a few dedicated functions: ______________________
   iv. Dedicated computer systems need special software to function properly: ______________________
   v. DVD players are dedicated computer systems: ______________________

2 (a) Convert:
   i. The hexadecimal number \( A2 \) to binary.
   ii. The hexadecimal number \( 1D \) to decimal.
   iii. The decimal number \( 70 \) to hexadecimal.

   \[ A2 = \] ______________________
   \[ 1D = \] ______________________
   \[ 70 = \] ______________________
   Working Space

2 (b) What is the largest unsigned decimal number an 8-bit register can hold?

   Answer: ______________________

3 Study the logic circuit and complete the truth table overleaf:

   ![Logic Circuit Diagram]
Truth table:

<table>
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<th>A</th>
<th>B</th>
<th>C</th>
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4 Using the words: **Organizers, DTP, Image editing, CAD and Multimedia**, fill in the table below.

i. Generic software that includes a combination of text, audio, still images, animation and video:

ii. The process of altering/modifying a digital image on a computer:

iii. A small sized computer, often with an in-built diary application and few other functions such as an address book:

iv. Software used for the creation of a house plan:

v. The creation of documents, such as a flyer, using a page layout software on a computer:

5 (a) Different I.T.-related personnel have different roles in their duties. Three types of persons working in an I.T. environment are: **Systems Analyst/Designer, Computer Operator** and **Computer engineer**. Which person from the given list does the following tasks?

i. Sets up a computer system:

ii. Loads printer with paper:

iii. Defines the I/O requirements of a new system:

(b) Computers in society have both their negative and positive effects. Name an advantage and a disadvantage of computers in **medicinal diagnosis**.

**Advantage:**

**Disadvantage:**
6 The **Data Protection Act** became law in Malta in 2001. Write whether the following statements concerning this Act are True (T) or False (F):

i. The Act ensures that personal data is processed fairly and lawfully: _________________

ii. Anyone can collect personal data for any reason: _________________

iii. Data collected must be correct and up to date: _________________

iv. This law applies only for public sectors: _________________

v. If data is found to be incorrect with regards to its processing purpose, it must be corrected or erased: _________________ [5]

7 Generations of files is used to describe the **backup** process. The diagram below shows how files are generated. Fill in the boxes by using the following terms: **Updating Program, New Master File, Master File, Error Report** and **Transaction File**.

![Diagram of file generation process]

8 (a) A **modem** is required so that computers communicate to one another over long distances. Fill in the missing words below which concerns modems.

When a user is **sending** information from one place to another, the modem converts this data from ________________ to ________________ so that the end-user can receive it in his/her computer. [2]

(b) **Videoconferencing** is a conference between two or more users at different sites by using computer networks. From the following list given choose the **three** most important input/output devices which are needed for videoconferencing: webcam, printer, mouse, microphone, scanner, speakers.

1st device: ___________________________

2nd device: ___________________________

3rd device: ___________________________ [3]

9 (a) Distinguish between:

i. compilers and interpreters

ii. compilers/interpreters and assemblers

iii. source code and executable code
i. Answer: _____________________________________________
   _____________________________________________

ii. Answer: _____________________________________________
   _____________________________________________

iii. Answer: _____________________________________________
   _____________________________________________

(b) High level languages are said to be problem-oriented while low level languages are machine-oriented. Give two reasons why programmers nowadays prefer to program using a high level language rather than a low level language.

1st reason: _____________________________________________
   _____________________________________________

2nd reason: _____________________________________________
   _____________________________________________

10 Software can be divided into system software and application software. Briefly explain the difference between the two types of software.

System: _____________________________________________
   _____________________________________________

Application: _____________________________________________
   _____________________________________________

(b) i. State whether utility software is system or application software.
ii. Give two examples of utility software.

Utility software: _____________________________________________
   _____________________________________________

Example 1: _____________________________________________
   _____________________________________________

Example 2: _____________________________________________
   _____________________________________________

11 For each statement below give the most suitable input or output device.

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<tbody>
<tr>
<td>i.</td>
<td>Reads the digital data on an item in a supermarket:</td>
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<td>ii.</td>
<td>A device that can produce carbon copies:</td>
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<td>iii.</td>
<td>Very useful to print designs created by CAD applications:</td>
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<td>iv.</td>
<td>Every user needs it to type documents:</td>
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<td>v.</td>
<td>Used to facilitate the entry of data in the processing of cheques:</td>
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**Section B – Answer BOTH Questions**

12 Each of the statements below describes a programming problem. Below each problem is a set of incomplete Pascal instructions to solve the problem. Complete the instructions.

(a) Ask the user to input a Real number $X$ and output the integer part stored in variable $Y$.

```
__________ ('Enter number: ');
__________ (X);
Y := _______(X);
__________(Y);
```

(b) Declare a constant $pi$ (π) equal to 3.143. Ask the user to enter the radius $r$ of a circle and store the area of the circle in variable $A$. Then outputs the area with 2 decimal places.

*(Area of circle = $\pi r^2$. Use the built-in mathematical functions where necessary.)*

```
pi = 3.143;
Begin
Write('Enter radius: ');
__________________;
A := pi*__________;
Writeln('The Area is: ', A:________);
End.
```

(c) Ask the user to enter his/her age, if the age is less than 18 the message ‘You cannot drive’ is output. Use a While loop to terminate the execution until the age of 18 or more is given.

```
age:=0;
_________ age _______ Do
__________
Write('Enter age: ');
Readln(________);
If _________ 18 Then Writeln('You cannot drive.');
End;
```
(d) Ask the user to enter his/her name and store it in variable `name`. Then the amount of characters of his/her name is output.

```
Write('Enter your name: ');

______________;

amount := _________(name);

Writeln('Amount of characters in your name is:  ', _________);
```

1 Mark [3]

13 (a) Briefly describe what **Systems Analysis** is?

__________________________________________________________

__________________________________________________________

__________________________________________________________

(b) The following are the seven stages of Systems Analysis not in the correct order:

*Present system study and analysis; Project selection and feasibility study; System maintenance; Implementation and changeover methods; Programming and documentation; Control and review and Design of new computerised system.*

i. Write the seven stages of Systems Analysis in the correct order.

ii. For each stage say briefly what is done.

i. Stage 1: __________________________________________

Stage 2: __________________________________________

Stage 3: __________________________________________

Stage 4: __________________________________________

Stage 5: __________________________________________

Stage 6: __________________________________________

Stage 7: __________________________________________

ii. Stage 1: __________________________________________

____________________________________________________

____________________________________________________

____________________________________________________

Stage 2: __________________________________________

____________________________________________________

____________________________________________________

Stage 3: __________________________________________

____________________________________________________
Stage 4: 

Stage 5: 

Stage 6: 

Stage 7: 

[14]