



Paper 1

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2. (a) Modern computer uses Von Neumann Architecture.  
Describe what is meant by Von Neumann Architecture. [3]

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(b) State the three stages that the processor performs when it receives a task. [3]

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(c) Describe what each of the following register does.  
(i) Program Counter(PC) [2]

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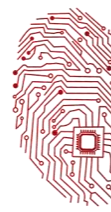
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(ii) Memory Address Register [2]

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(iii) ..... [2]

Memory Data Register

(iv) ..... [2]

Current Instruction Register

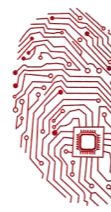
(v) ..... [2]

Accumulator

(d) When data is being transmitted around a computer, buses are used.  
Name and describe the functions of two different types of buses. [4]

(e)(i) The internal buses in a computer use parallel communication while most peripherals communicate with a computer using serial communication.  
Explain the differences between the ways in which parallel and serial communication is carried out. [2]





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(ii) Most peripherals, such as printers and keyboards, communicate with a computer using a serial connection.

Apart from the widespread availability of USB (Universal Serial Bus) ports, explain why peripherals usually use a serial communication method such as USB instead of parallel communication.

**[2]**

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3. Explain the difference between free software, free ware and shareware.

**[6]**

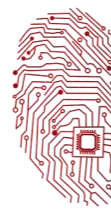
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4. High-level languages require either an interpreter or a compiler to translate the program. The table below lists a number of statements about language translators. Tick to show which statements refer to interpreters and which refer to compilers.

Statements	Interpreter (✓)	Compiler (✓)
Translates the source code into machine code all at once		
Produces an executable file in machine code		
Executes a high-level language program one instruction at a time		
Once translated, the translator does not need to be present for the program to run		
An executable file is produced		

**[5]**





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5. (a) Identify the logic gate for the truth table below.

A	B	X
0	0	0
0	1	1
1	0	1
1	1	0

[1]

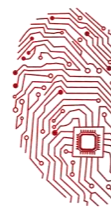
(b) Draw the logic circuit corresponding to the following logic statement:

$$X = ((A' + B') \cdot (C \cdot B'))'$$



[6]





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(b) Complete the truth table for the above logic statement:

A	B	C	Working Space	X
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[4]

6. A computer stores data in binary. Convert the following numbers into their respective asked bases.

(a)  $(117)_{10} = (??)_{16}$

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(b)  $(F52C)_{16} = (??)_2$

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(c)  $(1001\ 1110)_2 = (??)_{10}$

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(d)  $(262)_{10} = (??)_2 = (??)_{16}$

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[10]

7. State any five purposes of an operating system.

[5]

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