

QUESTION 1.

2



1 Complete the following by writing either **compiler**, **interpreter** or **assembler** provided.

- – translates source code into object code.
- – translates low-level language into machine code.
- – stops the execution of a program as soon as it encounters an error.

[3]

2 Motion sensors are used in a security system to detect intruders.

Name **three** other sensors that could be used in the following applications.

Give a different type of sensor for each application.

Application	Sensor
controlling street lights	
monitoring a river for pollution	
controlling traffic lights	

[3]

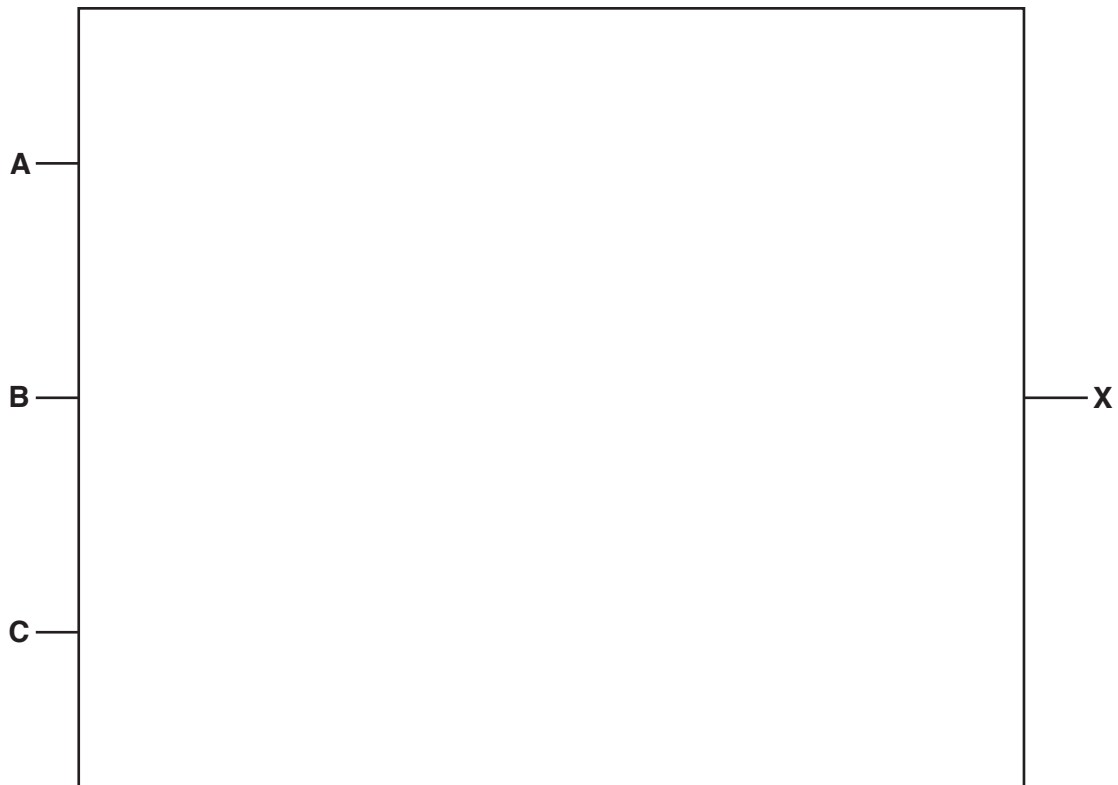
QUESTION 2.

9



(b) Draw a logic circuit corresponding to this logic statement:

$X = 1$ if (A is NOT 1) OR ((B is 1 OR C is 1) AND (B is NOT 1 OR A is NOT 1))



[6]

9 Three types of translators are **assemblers**, **compilers** and **interpreters**.

Tick (✓) the appropriate boxes to show which statements apply to each type of translator.

Statement	Assembler (✓)	Compiler (✓)	Interpreter (✓)
Translates high-level language into machine code			
Provides error diagnostics			
Translates whole program to object code in one operation			
Translates and executes one line of code at a time			

[3]

QUESTION 3.

2



1 A Von Neumann model for a computer system has a central processing unit (CPU) that uses the use of registers.

(a) Identify **three** registers that may be used.

Register 1

Register 2

Register 3 [3]

(b) The CPU is responsible for processing instructions.

One stage of processing instructions is the decode stage.

(i) Identify the **two other** stages of processing instructions.

Stage 1

Stage 2 [2]

(ii) Identify the component of the CPU that is responsible for decoding instructions.

..... [1]

2 Both an interpreter and a compiler can be used when writing a program in a high-level language.

(a) Explain why a programmer would make use of both an interpreter **and** a compiler.

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..... [4]

3

(b) Give **three** reasons why a programmer would choose to write a program in a high-level language, instead of a low-level language.

Reason 1

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Reason 2

.....

Reason 3



QUESTION 4.

10



8 Four descriptions about compilers and interpreters are shown below.

Draw lines to indicate which descriptions refer to a compiler and which descriptions refer to an interpreter.

Description

It is more difficult to debug the code since one error can produce many other associated errors.

The speed of execution of program loops is slower.

It produces fast, executable code that runs directly on the processor.

It is easier to debug the code since an error is displayed as soon as it is found.

Compiler

Interpreter

[4]

QUESTION 5.



1 (a) Give **two** reasons why a programmer would choose to write code in a low-level language.

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[2]

(b) 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]

2 State **four** functions of an operating system.

1

2

3

4

[4]

QUESTION 6.

11



10 Six statements about assembly language are shown.

Tick (✓) whether the statement is **true** or **false**.

Statement	true (✓)	false (✓)
Assembly language uses mnemonic codes.		
Assembly language programs do not need a translator to be executed.		
Assembly language is a low-level programming language.		
Assembly language is specific to the computer hardware.		
Assembly language is machine code.		
Assembly language is often used to create drivers for hardware.		

[6]

QUESTION 7.



- 6 (a) Many programmers write computer programs in high-level languages. The programs must be translated into machine code to be read by the computer.

State **two** types of translator that can be used.

Translator 1

Translator 2 [2]

- (b) Explain **two** reasons why a computer programmer may choose to write a program in a high-level language, rather than a low-level language.

Reason 1

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Reason 2

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.....

..... [4]

- (c) **Three** examples of computer code are given in the table.

Tick (✓) to show whether each example of computer code is **High-level language**, **Assembly language** or **Machine code**.

Computer code	High-level language (✓)	Assembly language (✓)	Machine code (✓)
10110111 11001100 01011100			
FOR X = 1 TO 10 PRINT X NEXT X			
INP X STA X LDA Y			

[3]