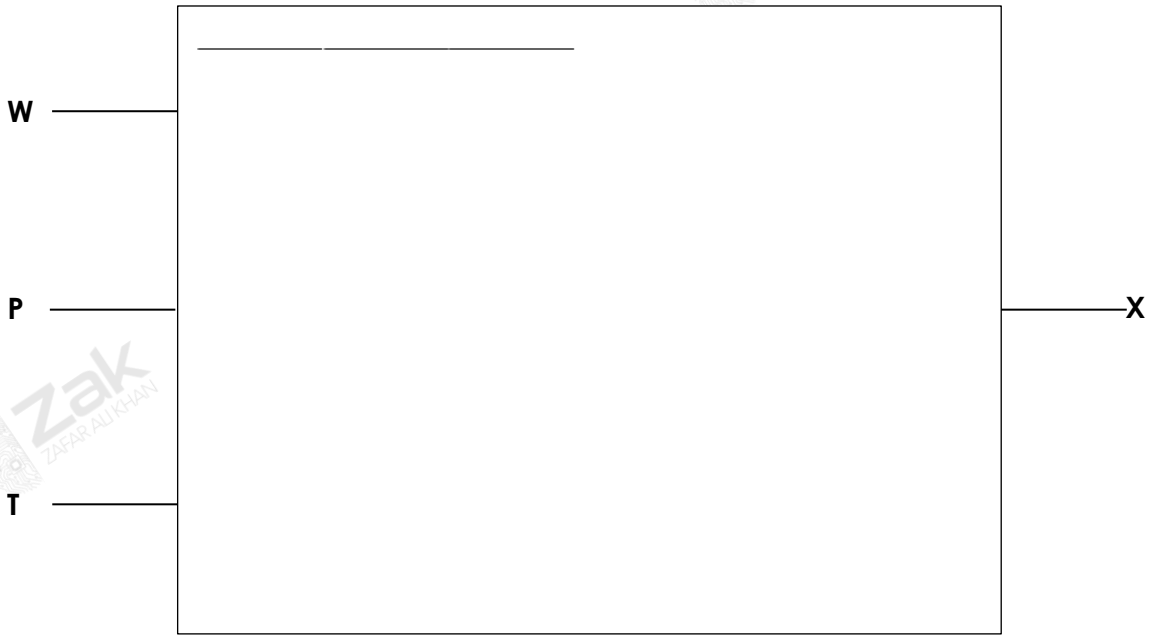
1 A wind turbine must shut down when certain conditions are met. The three variables and the conditions which dictate their values are shown in the table:

Variable		Binary Value	Condition
Name	**Description**		
W	Wind speed	1	Wind speed >= 100 kilometres per hour (kph)
		0	Wind speed < 100 kilometres per hour (kph)
P	Oil Pressure	1	Oil pressure low
		0	Oil pressure normal
T	Motor Temperature	1	Motor temperature >=50
		0	Motor temperature < 50

A logic circuit is to be designed where the output, **X**, is 1 if:
either wind speed >= 100 kph and oil pressure normal
or motor temperature >= 50°C and oil pressure low
or wind speed < 100 kph and motor temperature >= 50°C

(a) Draw a logic circuit.



[6]

(b) Complete the truth table for this system:

			WORKING SPACE	
W	**P**	**T**		**X**

[4]

2 Stock items, stored in a computerized stock control system, are identified by an item code. The format of the item code is LL999, where:

L – is a capital letter (A, B, ..Z)
9 – is a digit (0, 1, ..9)

Describe three different methods that could be used to validate the item code.

Method 1 .....

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..... **[2]**

Method 2 .....

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..... **[2]**

Method 3 .....

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..... **[2]**

3 A bank uses computers to store financial details of its customers.

(a) State three measures for data to protect personal customer data.

Measure 1 .....

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Measure 2 .....

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Measure 3 .....

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Measure 4 .....

..... **[3]**

(b) The administration staff at the bank are concerned about data privacy while data is being sent over Internet.

Describe what is encryption and decryption that can be used to reduce these concerns.

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..... **[5]**

(c) The management of the bank is concerned about the accuracy of data INPUT on the computer system.

Explain how visual and double data entry verification can be used to reduce errors.

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..... **[4]**

4 (a) What is an INTERRUPT signal?

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..... **[2]**

(b) How an interrupt is dealt with by an operating system?

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..... **[4]**

5 (a) State **one** difference between HTML structure and Presentation. **[2]**

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(b) How is MAC address different from IP address? **[2]**

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.....

(c) What are three different methods of error detection and correction in data transfer? **[3]**

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6 (a) Computer uses several types of storage devices that are categorized under following types. Name devices **(2 each**) for all three following categories.

PRIMARY:.....

SECONDARY:.....

OFFLINE:..... **[3]**

(b) Which offline device will you chose to carry data between school and home, and why?

DEVICE NAME:.....

REASON:.....

.....

..... **[3]**

7 If the ISP's DNS server is hacked then all ISP clients will become the victim of Phishing.

Explain this phenomenon and describe ISP and DNS.

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..... **[6]**

8 (a) Write the name of the term being described and term missing.

Word/phrase	Meaning
code of conduct	a set of rules governing the behaviour of a group or organisation (e.g. computer professionals)
	moral principles governing the design, building, implementation and use of computer systems
copyright	the legal right to intellectual property
	copyrighted software that is available free of charge
intellectual property	something unique that has been physically created by someone (an idea that hasn't been implemented is not intellectual property)
licence	a permit to use/distribute/copy/adapt software
	software that can be freely copied, distributed and adapted
	copyrighted software that is available free of charge for a limited period, after which a licence must be obtained

[4]

(b) Input, Output and storage devices:

Word/phrase	Meaning
	An output device that can generate a three-dimensional (3D) physical object
	A magnetic secondary storage device
	An output device for printing pages using ink cartridges
	An input device that allows text characters and symbols to be entered into a computer system
laser printer	An output device for printing pages that uses toner cartridges
	An input device that allows sound to be entered into a computer system
optical discs	Secondary storage devices
	An input device that is used to move a pointer on a screen
	An input device that takes physical printed information and converts it into a digitised format
	Output devices that produce sound
	A secondary storage device that has no moving parts
	Both an input and an output device: the display outputs an image; it can receive inputs by being touched by either a finger or a stylus
trackerball	An input device that moves a pointer on a screen when a ball on the device is rolled or moved

[10]

9 (a) Five statements about interpreters and compilers are shown in the table below.

Study each statement.

Tick (✓) to show whether the statement refers to an interpreter or to a compiler.

Statement	Interpreter	Compiler
Creates an executable file that runs directly on the computer		
More likely to crash the computer since the machine code produced runs directly on the processor		
Easier to debug since each line of code is analysed and checked before being executed.		
Slow speed of execution of program loops		
It is more difficult to modify the executable code since it is in machine code format.		

[5]

(b) An assembler converts every assembly level language instruction into its equivalent machine language command. What is this relationship?

..... **[1]**

(c) What is the relation between high level language and machine code?

..... **[1]**

(d) When writing a computer program in a language like Visual Basic as soon as programmer presses enter key, statement is checked for the error and computer reports it right away. And when programmer wants to execute program code, a machine code is generated & executed.

Describe when possibly Interpreter and Compiler is used in this situation.

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..... **[1]**