IBDP Comp. Science

Topic 2A – Exam

2021-2023 Cohort

Marking Scheme

1.

a. Award up to 3 marks max.

1 mark for dividing in 4 bits

1 mark for converting of each 4 bits

1 mark for correct answer

b. Award up to 2 marks max.

Hexadecimal is closer to human language, easier to manipulate;

More combinations of representations can be done with less bytes;

Information will be easily decoded;

2. Award up to 3 marks max.

Award one mark for SSD

Award up to 2 marks for justification of the option.

SSD has no movable pieces that could damage on movement;

SSD has fast speed, easy of access for on the go files:

SSD has less weight per MB making devices lighter and more suitable for trip;

Accept any other suitable explanation or valid justification for other choices.

3. Award up to 2 marks max.

Data/files are stored in a known position/address; The head can move to any position; Without reading other data/files; An index of files/FAT is stored on the disk; File positions can be calculated;

4. Award up to 2 marks max

Award up to 1 mark for each distinction between the types

Primary memory is faster and smaller than secondary

Primary memory is used for holding small amounts of data that require immediate access

Secondary memory is used to store data that needs to be transferred or stored for longer periods of time

5.

a. Award up to 2 marks max

Award 1 for intermediate steps or calculation displayed

Award 1 for correct answer

b. Award up to 1 marks max

For correct value, no calculation process required.

c. Award up to 1 marks max

For correct value, no calculation process required.

6. Award up to 1 marks max

Unit of data measurement

Equivalent to 8 bits – the smallest data type.

7. Award up to 4 marks max.

Award 1 mark for 4 stages

Award 1 mark for 2 registers stated

Award 1 mark for parts of the CPU

Award 1 mark for logical representation of the cycle.

8

a. Award up to 1 marks max

b. Award up to 2 marks max

9. Award up to 3 marks max.

A colour will be split into three components (Accept RGB as an example); Each component will be assigned a certain number of bytes;

Each component will be represented using hexadecimal system

10. Award up to 3 marks max.

All data is represented as binary values

Files contain file extensions to determine the software and type of data they represent

File headers contain information on the type of file and codification used in an specific file.

Each different type of file is then interpreted in a different way based on the codification.

11.

a. Award up to 1 mark max

2 bytes – 16 bits – possible combinations = 2 16

b. Award up to 2 marks max.

1 mark for correct calculation of characters in Hello World! – 12 Ch

1 mark for correct calculation of file size. = 24 Bytes

12. Award up to 3 marks max.

Obtains the data/instructions from the memory;

Interprets/decodes them into commands/steps/signals;

Controls transfer of data and instructions among other units of a CPU (for example, command to ALU for execution);

Manages/coordinates all the units of the computer;

etc.

13. Award up to 2 marks

Several cores provide the possibility of multiple tasks to be done at the same time

Faster calculations as several can be carried out at the same time

Other aspects might affect performance (memory speed)

Energy consumption might increase.

Software not written for use of several cores will function utilizing only one of the cores, misusing the available resources.

14. Award up to 2 marks

Award 1 mark for a clear suggestion

Award 1 mark for an explanation of the suggestion based on the specific needs of the school