

QUESTION 1.



2 (a) When recording a video, state what is meant by frame rate.

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(b) Video streaming can use either interlaced encoding or progressive encoding.

Describe what is meant by the following terms.

Interlaced encoding

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.....

Progressive encoding

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.....[4]

(c) (i) Name the video terms described below:

Description	Term
Pixels in two video frames have the same value in the same location. There is duplication of data between frames.
A sequence of pixels in a single video frame have the same value.

[2]

(ii) Give **one** file technique that could be applied when either of the two features, described in **part (c)(i)**, are present.

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



(d) The video is recorded with a frame rate of 60 frames per second (fps) and progressive encoding.

(i) Describe what is meant by a **frame rate of 60 fps**.

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.....[1]

(ii) Describe what is meant by **progressive encoding** in video recording.

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.....[2]

(e) MP4 multimedia container format is used to save the video.

State what is meant by **multimedia container format**.

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.....[1]

QUESTION 3.



6 A student records a video using a digital camera.

(a) The recording uses interlaced encoding.

Describe **interlaced encoding**.

..... [3]

(b) State **one** benefit of using interlaced encoding compared to progressive encoding.

..... [1]

(c) A video can be compressed using spatial redundancy or temporal redundancy.

Explain how **temporal redundancy** compresses a video.

..... [2]

(d) A sound track is recorded for the video.

(i) Describe how a computer encodes the sound track.

..... [3]



(ii) Explain how the sampling rate and sampling resolution affect the file size of a track.

Sampling rate

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Sampling resolution

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[2]



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QUESTION 4.



4 Shazia is creating a computer program that will be released to the public. The program will be released as a video.

(a) Shazia uses a microphone to record a sound track for the video.

(i) Describe the internal operation of a microphone.

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..... [3]

(ii) The script for the sound track is printed using a laser printer.

Describe the internal operation of a laser printer.

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..... [3]

(b) The video is recorded using progressive encoding.

Describe **progressive encoding**.

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..... [2]



(c) Shazia’s computer has Dynamic RAM (DRAM) and Static RAM (SRAM).

Explain the differences between Dynamic RAM and Static RAM.

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..... [4]

(d) Shazia wants to make sure her computer program is copyrighted.

(i) Define the term **copyright**.

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..... [1]

(ii) Shazia does not want to release the software as open source.

Explain why Shazia does **not** want to use an open source licence.

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..... [2]

(iii) Name **and** describe **two** software licences, other than open source that Shazia could use.

Licence 1

Licence 2

[2]

QUESTION 5.



6 Dominic uses a tablet computer to complete work. He records videos of his work for his colleagues to watch at a later date.

(a) The tablet computer has input and output devices.

(i) The table lists four devices built into the tablet.

Tick (✓) one or more boxes for each device to identify whether it is an input device, an output device or both.

Device	Input	Output
Touchscreen		
Webcam		
Microphone		
Fingerprint scanner		

[2]



(ii) An external speaker is plugged into the tablet computer.

The sequence of steps 1 to 7 describes the internal operation of the speaker.

The statements **A**, **B**, **C**, **D** and **E** are used to complete the sequence.

Letter	Statement
A	Changes in the audio signal cause the direction of the electrical current to change. This determines the polarity of the electromagnet.
B	The vibration creates sound waves.
C	An electric current is sent to the speaker.
D	The electromagnet is repelled by, or attracted to the permanent magnet.
E	The electric current passes through the coil.

Write **one** of the letters **A** to **E** in each appropriate row to complete the sequence.

1

2

3 The current in the coil creates an electromagnetic field.

4

5

6 The movement of the coil causes the diaphragm to vibrate.

7



(b) The tablet computer’s secondary storage is solid state (flash) memory.

(i) Give **one** reason why the tablet computer needs secondary storage.

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..... [1]

(ii) Describe solid state memory.

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..... [3]

(c) The tablet computer has RAM and ROM memory.

State the purpose of RAM and ROM memory in the computer.

RAM

ROM

[2]

(d) Dominic’s tablet captures a video of Dominic to send to other people. The video is made of a sequence of images and a sound file.

(i) Describe how the images and sound are encoded into a digital form.

Images

Sound

[4]



- (ii) The sequence of images and the sound file create a video. This is sent as a video stream. The video stream can use interlaced encoding or progressive encoding.

Describe the terms **interlaced encoding** and **progressive encoding**.

Interlaced encoding

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Progressive encoding

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[4]

- (e) Dominic sends his videos to his colleagues over the Internet using bit streaming.

- (i) Describe how the video is sent using bit streaming.

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[4]

- (ii) Circle either Real-time or on-demand to identify whether the video will be sent using real-time or on-demand bit streaming. Justify your choice.

Real-time / on-demand

Justification

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[2]



(iii) Describe the following video terms.

Temporal redundancy

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Spatial redundancy

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[2]

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