Cambridge International AS & A Level

Cambridge International Examinations
Cambridge International Advanced Subsidiary and Advanced Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

2498455565 5

INFORMATION TECHNOLOGY **9626/33**

Paper 3 Advanced Theory **May/June 2018**

1 hour 45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of this page.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

Any businesses described in this paper are entirely fictitious.

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1 Video is streamed over networks and the internet at different bit rates. Fig. 1 shows a summary of the bit rates that are usually required for various video resolutions. Fig. 2 shows the bandwidths that are typically available over different mobile (cell) phone connections.

Output video resolution (pixels)	Bit rate (Mbits/s)
320 × 240	0.4
480 × 270	0.7
1024 × 576	1.5
1280 × 720	2.5
1920 × 1080	4.0

Fig. 1

Type of mobile connection to network/internet	Typical maximum bandwidth available for download (Mbits/s)
3G mobile connection	0.31
4G mobile connection	15
Bluetooth® 1.1 connection	0.5
Wi-Fi (IEEE 802.1g) wireless connection	54

Fig. 2

Using all the information in Fig. 1 and Fig. 2, explain how the viewing experience of a streamed video displayed on a mobile (cell) phone screen of resolution 1024 × 576 pixels is affected by bit rate and available bandwidth.

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2 The use of JavaScript within the HTML code of a web page allows the page to react to user intervention.
The code below contains a function named ***checkreadpagefunction*** that will ask the user to confirm that the page has been read.

Complete the JavaScript code by writing extra code that will capture the click event and execute the function.

```
<html>
<body>
<p>Click on the button to confirm that you have read this page.</p>
<button id="button1">Click here</button>
<script>
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function checkreadpagefunction() {
    alert ("I have read this page.");
}
</script>
</body>
</html>
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You may use the space below for any rough work.

3 Fig. 3 shows a switched network with computers at **A**, **B**, **C** and **D**.
S1, S2, S3, S4, S5 and S6 are switches. A message is being sent between computers at **A** and **B**.
The whole message is sent at once along the route shown by the arrows.

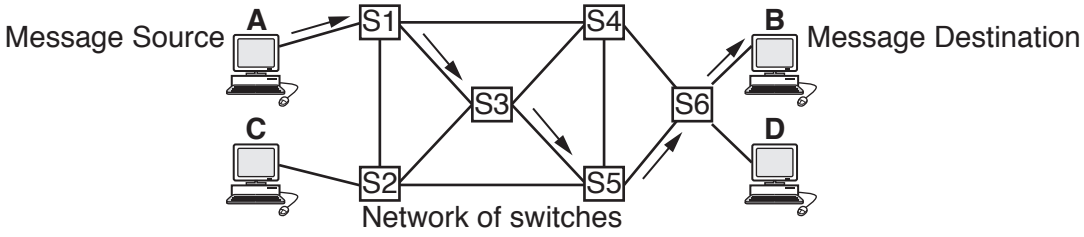

Fig. 3

(a) Explain, with reference to Fig. 3, why this method of sending a message by the route shown is often called 'store and forward'.

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(b) Describe **two** advantages of using the 'store and forward' method to send a message over this network.

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4 An animator used a computer to produce an animation consisting of eight frames. The frames are shown in Fig. 4.

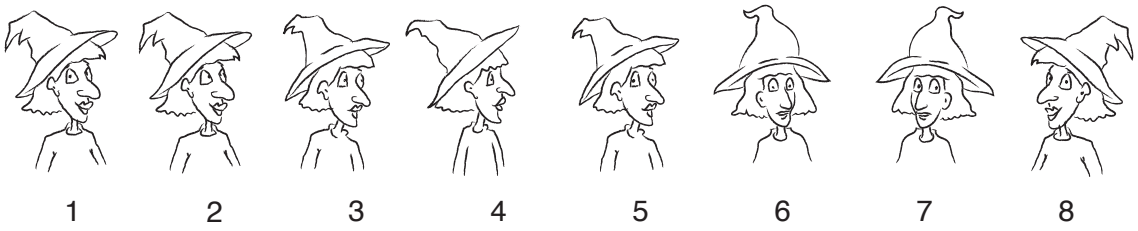

Fig. 4

The animator only drew some of the frames in this animation and the computer created the others.

Explain how the sequence of frames was created.

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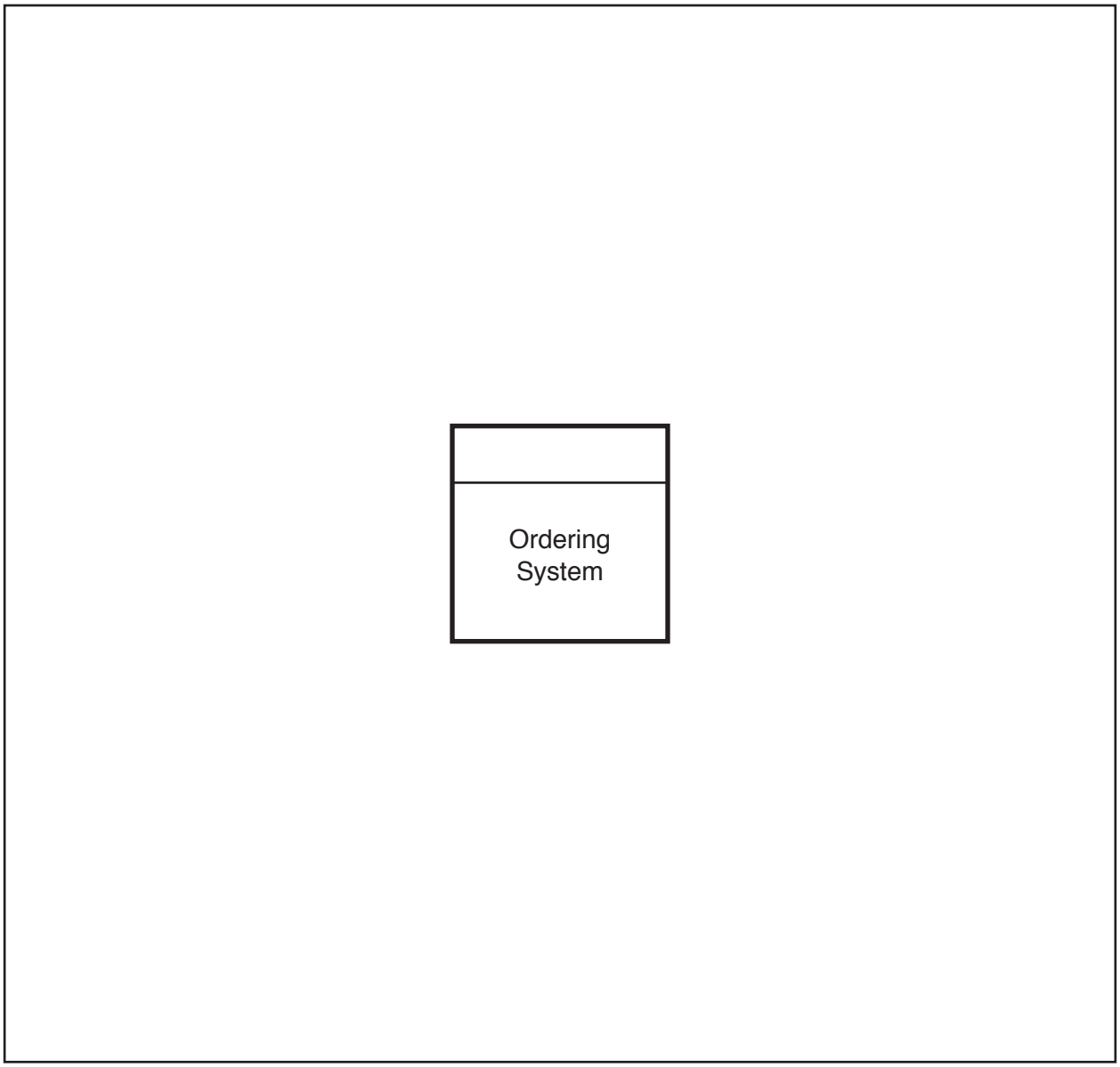
5 RockICT Sales sells hats to customers direct from its warehouse. It has a centralised ordering system that is linked to the warehouse and accounts systems. When a customer orders a hat, the system:

- takes the orders from the customer
- checks the stock status with the warehouse
- sends messages to the customer advising of the status of the order
- sends out a request for payment and processes the payment
- requests the shipping of the hat from the warehouse
- receives a shipping confirmation and a stock inventory update from the warehouse
- sends stock inventory and payment updates to the accounts.

Draw a Level 0 (context level) Data Flow Diagram of the system to show the external entities and the data flow between these and the ordering system. The ordering system has been drawn in the centre of this box for you.



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6 **(a)** Describe how a bitmap ('raster') graphic is stored in a computer file.

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(b) Vector images are stored in computer files in a different format to how bitmap ('raster') images are stored.

Explain why vector images must be converted to bitmap ('raster') images for display on a digital monitor.

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7 Describe how holographic optical disk storage technology uses lasers to store vast amounts of data.

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8 Describe the benefits to workers of teleworking.

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9 **(a)** Describe how vision enhancement technology can assist visually impaired people when walking around a shopping street.

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(b) Describe **two** other uses of vision enhancement technology.

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10 Consuela is organising the building of her new house.

Discuss the advantages and disadvantages of the various types of project management software for this task.

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11 Discuss the benefits and drawbacks of using satellites for television and radio broadcasting.

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12 Evaluate the impact of e-business on society.

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