

**INFORMATION AND COMMUNICATION TECHNOLOGY**

**PAPER 2C**

**Multimedia Production and Web Site Development**

**Question-Answer Book**

11.15 am – 12.45 pm (1 hour 30 minutes)

This paper must be answered in English

**INSTRUCTIONS**

- (1) After the announcement of the start of the examination, you should first write your Candidate Number in the space provided on Page 1 and stick barcode labels in the spaces provided on Pages 1, 3 and 5.
- (2) **ANSWER ALL QUESTIONS.** Write your answers in the spaces provided in this Question-Answer book. Do not write in the margins. Answers written in the margins will not be marked.
- (3) Supplementary answer sheets will be supplied on request. Write your candidate number, mark the question number box and stick a barcode label on each sheet, and fasten them with string **INSIDE** this book.
- (4) No extra time will be given to candidates for sticking on the barcode labels or filling in the question number boxes after the 'Time is up' announcement.

Please stick the barcode label here.

Candidate Number



**Answer all questions.**

1. Mr Au sets up a web site to provide a movie-on-demand service so that customers can watch movies online.

(a) Mr Au designs a web page instead of a client program to deliver the movies to his customers. Give one advantage of this design to the following.

(i) The customers

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(ii) Mr Au

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(2 marks)

(b) Mr Au is advised to store the movies in AVI format on the server. Give one advantage and one disadvantage of using AVI format.

Advantage: \_\_\_\_\_

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Disadvantage: \_\_\_\_\_

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(2 marks)

(c) Mr Au decides to use streaming technology to deliver the movies to customers.

(i) Give an advantage for customers of using streaming technology.

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(ii) A customer complains that he cannot watch the movies smoothly. Suggest **two** different types of causes for this problem and explain your answer briefly.

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(3 marks)

Please stick the barcode label here.

- (d) It takes Mr Au 200 seconds to upload a 60 MB movie to the server. Estimate the transmission bit rate and show your calculation.

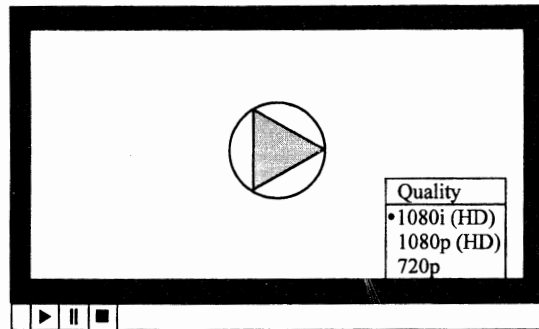
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(2 marks)

- (e) After logging on to the web site, customers can watch movies, as shown below:



- (i) Suggest **two** common file formats for High Definition (HD) video.

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- (ii) Customers can choose option 1080i. What does the number 1080 represent?

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- (iii) The letters 'p' and 'i' after the numbers refer to 'Progressive' and 'Interlaced' respectively. Briefly describe what these terms mean.

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(6 marks)

Answers written in the margins will not be marked.

2. Peter is a photographer. He sets up a web site to sell photos online.

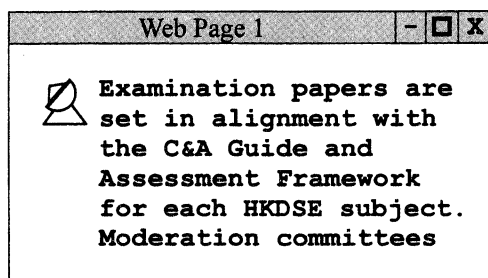
- (a) The photos are in the file formats PNG, JPG and BMP. Compare these formats by writing 'Yes'/'No' in the following table.

	Compression (Yes/No)	Data loss in compression (Yes/No)
PNG		
JPG		
BMP		

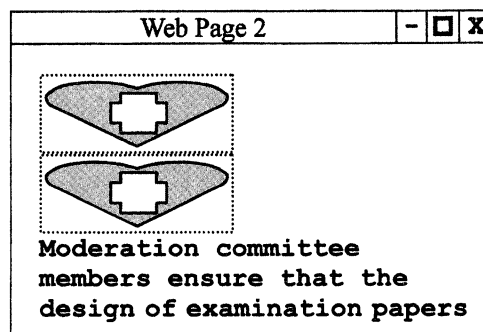
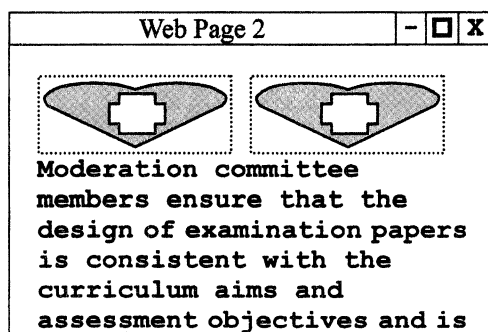
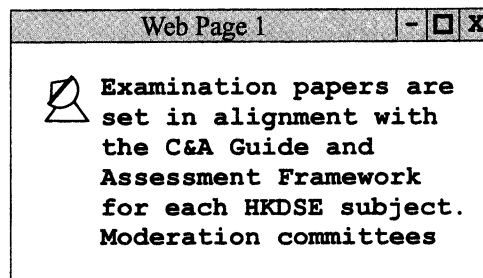
(3 marks)

- (b) Peter tests two web pages with different browsers, as shown below.

Browser 1



Browser 2



- (i) Why do the two browsers display Web Page 2 differently?

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- (ii) Suggest **two** different web page design features that can keep the layout of the web pages the same for the common browsers.

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(3 marks)

(c) Peter includes metadata in his web pages as follows:

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<head>
<meta ...>
...
</head>
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(i) Even though the metadata is usually not displayed in web browsers, Peter still wants to include it in his web page. Why?

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(ii) Give **two** different types of metadata.

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(3 marks)

(d) Peter has a true-color photo with resolution  $5184 \times 3456$ . Estimate the file size of the photo in MB without compression. Show your calculation.

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(2 marks)

(e) Peter wants to provide a function on the web site so that users can produce a video from a number of photos. Suggest **three** attributes/features of the function.

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(3 marks)

Answers written in the margins will not be marked.

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3. Ms Li develops an online music store through which members can purchase music files. The design of the login page is shown below:

The login form has a title bar labeled 'Login'. It contains three input fields: 'Username:', 'Password:', and 'Captcha:'. The 'Captcha:' field displays the text 'An75' in a distorted font. Below the input fields are two buttons: 'Submit' and 'Cancel'.

- (a) (i) Why should the captcha 'An75' be shown as an image? Explain briefly.

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- (ii) Ms Li adds alternative text to every captcha image for blind people. Why?

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- (iii) Other than the design stated in (a)(ii), describe another design which would allow blind people to obtain the information provided by the captcha.

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(3 marks)

- (b) Ms Li tests the login page twice, as follows:

Test 1: Press the 'Submit' button without any input data.

Result: Instantly the following window is shown.

The alert dialog box has a title bar labeled 'Alert'. The main text area contains the message 'No username!'. At the bottom, there is an 'OK' button.

Test 2: Press the 'Submit' button with a username and an invalid password.

Result: After a few seconds, the following window is shown.

The alert dialog box has a title bar labeled 'Alert'. The main text area contains the message 'Incorrect username or password!'. At the bottom, there is an 'OK' button.

Answers written in the margins will not be marked.

Describe how data validation is implemented in this interactive web page.

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(4 marks)

(c) Ms Li designs the following web page to handle customers' music orders:

Order Page				
Available music for purchase:				
CODE	SONG NAME	DURATION	PRICE	
ACL001	Be together	3'55"	\$9.0	▲
ACL002	Hello world	4'04"	\$11.0	
ACL003	Ups and Downs	4'11"	\$12.5	
ACL004	Best time	3'45"	\$11.0	▼
Enter CODE here <input type="text"/> <input type="button" value="Buy"/>				
<input type="button" value="Keep Shopping"/> <input type="button" value="Check Out"/>				
The total amount is \$0.00 <input type="button" value="Confirm"/>				

Step 1: Input the code of a song in the text box.

Step 2: Press the 'Buy' button.

Step 3: If the purchase is not completed, click the 'Keep Shopping' button. The total amount will be calculated and updated. Then go to Step 1.

Step 4: Press the 'Check Out' button.

Step 5: The total amount will be calculated and updated.

Step 6: Press the 'Confirm' button to proceed to a payment page.

From the user's point of view, give **two** drawbacks of the design and suggest solutions for them.

Drawback 1: \_\_\_\_\_

Solution 1: \_\_\_\_\_

\_\_\_\_\_

Drawback 2: \_\_\_\_\_

Solution 2: \_\_\_\_\_

\_\_\_\_\_

(4 marks)

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Ms Li wants to record a song and save it as an audio file.

- (d) (i) She uses a sampling rate of 44.1 kHz. What does this mean?

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- (ii) She uses a sampling size of 16 bits. What does this mean?

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- (iii) She uses stereo recording. What does this mean? Give a reason to support the use of stereo recording.

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(4 marks)

- (e) Ms Li wants to mix the song with another audio file. Other than the attributes in (d), give **two** attributes of song mixing that she should consider.

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(2 marks)

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4. Janice, a web designer in a school, designs web pages which students use to select their activities. She proposes the following two designs:

Design P: Select activities by check boxes.

Please select:

- ☐ Bridge Club  
☒ Volleyball Club  
☐ Dance Club  
☒ Drama Club  
☒ English Club  
 ⋮

Submit

Design Q: Select activities using a multi-select list box.

Please select:

Bridge Club	▲
Dance Club	
Soccer Club	■
Math Club	
Chess Club	▼

Select ▶

◀ Remove

Selected activities:

Volleyball Club  
 Drama Club  
 English Club

Submit

- (a) (i) Describe one scenario in which Design P is better. Justify your answer.

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- (ii) Describe one scenario in which Design Q is better. Justify your answer.

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- (iii) In order to minimise input errors, what should the system response be after the 'Submit' button is clicked?

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(5 marks)

(b) Janice considers using Design P.

- (i) If users want to change several selected activities, they can reload the web page to select activities again. Suggest an improvement to the design and explain your answer briefly.

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- (ii) Janice writes a client-side script to count the number of selected activities. The number of selected activities is stored in a variable  $n$ . Describe how the script accumulates  $n$ . Assume that the selection of the  $i$ -th check box is stored in an array `act[i]`.



(5 marks)

Answers written in the margins will not be marked.






Answers written in the margins will not be marked.


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The school finally decides to use Design Q. The school requires students to select activities with priorities 1, 2, 3 and so on, where the value of 1 represents the highest priority. A priority list of the selected activities will be shown on the right hand side.

- (c) Janice builds an UP button  and a DOWN button  with client-side scripts, as shown below. When clicking the UP button, the selected (highlighted) activity will move up one position in the priority list. When clicking the DOWN button, the selected activity will move down one position in the priority list.

Please select:



Bridge Club	
Dance Club	
Soccer Club	
Math Club	
Chess Club	

Select 

 Remove

Priority list:

1. Music Club
2. Drama Club
3. English Club
4. Volleyball Club

In the scripts, the following variables are used.

Variable	Description
P[i]	Store the name of the activity with priority i
temp	Temporary storage

Assume that the activity with priority i is selected.

- (i) Describe how P is updated in the script when the UP button is clicked.

- (ii) Describe how P is updated in the script when the DOWN button is clicked.

(4 marks)

END OF PAPER

Answers written in the margins will not be marked.

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