BOARD OF STUDIES
NEW SOUTH WALES

2010

HIGHER SCHOOL CERTIFICATE
SPECIMEN EXAMINATION

Industrial Technology
Multimedia Technologies

General Instructions
- Reading time – 5 minutes
- Working time – 1 hour and 30 minutes
- Write using black or blue pen
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of page 5

Total marks – 40

Section I Pages 2–4

10 marks
- Attempt Questions 1–10
- Allow about 20 minutes for this section

Section II Pages 5–8

15 marks
- Attempt Questions 11–15
- Allow about 35 minutes for this section

Section III Page 9

15 marks
- Attempt Question 16
- Allow about 35 minutes for this section

Section I

10 marks
Attempt Questions 1–10
Allow about 20 minutes for this section

Use the multiple-choice answer sheet for Questions 1–10.

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1 Which of the following file types are used for sound files?

(A) DOC and PDF

(B) MOV and AVI

(C) PICT and BMP

(D) AIFF and MIDI

2 What is the smallest possible piece of computer data?

(A) Bit

(B) Byte

(C) Packet

(D) Pixel

3 Which of the following software types can be exchanged and modified without seeking permission or paying fees or royalties?

(A) Freeware

(B) Shareware

(C) Licensed software

(D) Open source code

4 What graphic type does not distort or degrade when enlarged?

(A) Scalar

(B) Vector

(C) Postscript

(D) Bit-mapped

5 A graphic file has its width and height set to 320 pixels and 256 pixels respectively.

What percentage of the screen area will the graphic cover when the display on a monitor is set to 1280 by 1024 pixel resolution?

(A) 6.25%

(B) 12.5%

(C) 25%

(D) 50%

6 Which of the following is the most efficient way to format text for a desktop publication?

(A) Adjust the text formatting as you type.

(B) Type all the text first and then format the text as required.

(C) Type each section of the publication and then adjust the formatting as required.

(D) Create a style sheet that contains all the required fonts, sizes and formatting and apply it to the publication as you type.

7 Which of the following statements about copyright is correct?

(A) Copyright is NOT enforceable by law.

(B) An author always holds the copyright to the work they create.

(C) Copyright protects intellectual property from unauthorised use.

(D) A patent is necessary for an author to hold the copyright of a published work that he/she has created.

8 When video content is streamed from the internet and accessed on a computer, where is the data stored?

(A) Data is saved in the computer's hard drive.

(B) Video content is displayed without data being saved.

(C) Data is completely saved in the Temporary Internet Files folder on the computer before video content is displayed.

(D) Data is continuously stored in a buffer and video content is displayed as data is received.

9 What is the term given to the measurement of internet speed?

(A) Baud rate

(B) Broadband

(C) Bandwidth

(D) Megabits per second

10 A sound engineer has chosen to record the background audio for an upcoming movie in stereo. To produce a high quality non-compressed digital audio file, the sound engineer will use a bit depth of 16 and a sample rate of 96 kHz.

What would be the approximate resulting file size for a 2 minute 45 second audio track?

(A) 30 megabytes

(B) 60 megabytes

(C) 242 megabytes

(D) 483 megabytes

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Section II

15 marks
Attempt Questions 11–15
Allow about 35 minutes for this section

Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.

Question 11 (3 marks)

Name a factor that affects the quality of an image on a computer screen.

Explain how and why this factor affects image quality.

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Question 12 (2 marks)

What is meant by *lossy* compression?

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Question 13 (2 marks)

What are the benefits of using layers when editing multimedia projects?

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Question 14 (3 marks)

Analyse the hardware specifications that would be required for a system designed for editing, storing and presenting multimedia productions.

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Question 15 (5 marks)

Discuss the ethical issues that should be considered in responsibly developing a multimedia presentation.

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Section III

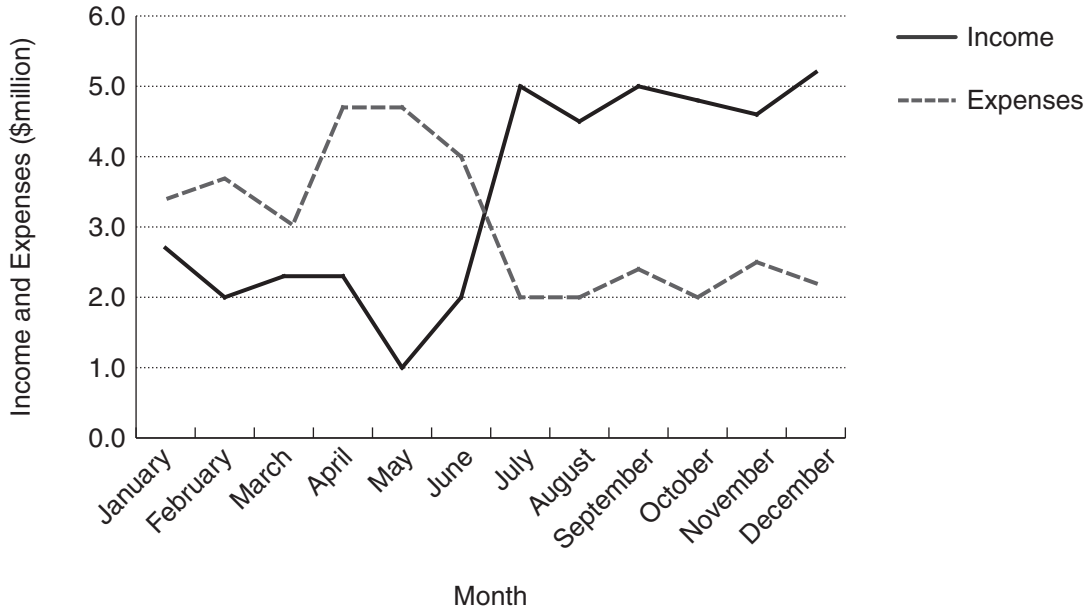
15 marks
Attempt Question 16
Allow about 35 minutes for this section

Answer the question in a writing booklet. Extra writing booklets are available.

Question 16 (15 marks)

In response to advances in technology, a company makes changes to its production techniques.

The following graph is from the company's business report for the past calendar year.



(a) Analyse the graph above to show how the changes to production techniques may have been responsible for the fluctuations in income and expenses. **5**

(b) Discuss the issues that the management of the company needs to consider before the introduction of new technology. **10**

End of paper

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2010 HSC Specimen Examination Mapping Grid

Question	Marks	Content	Syllabus Outcomes	Targeted performance bands
Section I				
1	1	Multimedia elements – audio: file formats	H1.2, H4.3	2–3
2	1	Multimedia elements – graphics: resolution	H1.2	2–3
3	1	Intellectual property and ethics – copyrights and multimedia	H5.1, H5.2	3–4
4	1	Multimedia elements – graphics: graphic images	H1.2, H4.3	3–4
5	1	Multimedia elements – graphics: resolution	H1.2, H3.2	4–5
6	1	World Wide Web – text: cascading style sheets	H5.1, H5.2	3–4
7	1	Intellectual property and ethics – copyrights and multimedia	H5.1, H5.2	3–4
8	1	World Wide Web – video: streaming	H1.2, H4.3	4–5
9	1	World Wide Web – video: connection speed	H1.2	3–4
10	1	Multimedia elements – audio: sampling	H1.2, H3.2, H4.3	5–6
Section II				
11	3	Multimedia elements – graphics: graphic images, file size, resolution, file formats	H1.2, H4.3	2–5
12	2	Multimedia elements – video: video compression	H1.2, H4.3	2–4
13	2	Multimedia elements – graphics: object layering	H1.2, H5.1, H5.2, H6.2	3–5
14	3	Multimedia elements – graphics, audio, video	H1.2, H4.3, H5.1, H6.1	3–6
15	5	Intellectual property and ethics – ethical use	H1.2, H4.3, H6.1	2–6
Section III				
16 (a)	5	Industry Study – structural considerations	H1.1, H1.2, H3.1, H7.2	2–6
16 (b)	10	Industry Study – structural considerations, technical considerations	H1.1, H7.2	2–6

BOARD OF STUDIES
NEW SOUTH WALES

2010 HSC Industrial Technology – Multimedia Technologies Specimen Examination

Sample Marking Guidelines

Section I

Question	Correct Answer
1	D
2	A
3	D
4	B
5	A
6	D
7	C
8	D
9	C
10	B

Section II

Question 12

MARKING GUIDELINES

Criteria	Marks
• Provides a clear explanation of the main features of *lossy* compression	2
• Provides some relevant information related to *lossy* compression	1

Sample answer:

Lossy compression is a method of significantly reducing the file size of a video or graphics or audio image (for example, for the internet) while still retaining suitable clarity for a particular purpose. The main purpose of lossy compression is to reduce file size while still retaining utility for a particular use.

Section III

Question 16 (a)

MARKING GUIDELINES

Criteria	Marks
• Provides a clear explanation (ie linking cause and effect) for the fluctuations in both income and expenses in terms of plausible causes stemming from the introduction of new production techniques and technologies • Uses terminology appropriate to an industrial technology setting • Communicates in a logical and coherent response	5
• Provides an explanation (ie some linking of cause and effect) of the fluctuations in either income and expenses in terms of plausible causes stemming from the introduction of new production techniques and technologies • Uses some terminology appropriate to an industrial technology setting • Communicates in a clear fashion	4
• Describes some aspects of the graph and links to features related to the introduction of new production techniques and technologies • Uses some appropriate terminology	3
• Provides several relevant features of the expenses and income graphs, without linking them to changes in production techniques OR • Plausibly links one feature of the graph (eg spike in expenses) to the changes in production techniques and/or technologies	2
• Lists one feature of the graph, eg expenses went up in March/April	1

Question 16 (a) (continued)

Sample answer:

From March to May expenses have increased due to the cost of upgrades to equipment/introduction of new technologies. The expense increases appear to be a once only event, signifying some initial expense associated with the changes to production techniques and new technologies introduced, and may have been a combination of hardware and initial setup costs, eg installation, and also 'soft' costs such as training courses for new staff.

After May expenses reduce until July when they are lower than before production changes, possibly due to more efficient techniques.

Income reduced from April to May possibly due to reduced production/downtime/training of staff, after which income increases to a maximum in July, after which it is relatively stable.

The graph indicates that the changes to production techniques have been successful due to increased income while expenses have reduced slightly.

Question 16 (b)

MARKING GUIDELINES

Criteria	Marks
• Clearly identifies a range of relevant issues that management should consider when introducing new technologies • Discusses, in a logical and coherent response, the positive and negative aspects of each of the issues identified, in relation to the company introducing new technologies, eg cost: negative aspect may be large initial outlays, positive aspect may be ongoing efficiencies that reduce long term costs	9–10
• Identifies several appropriate issues that management should consider when introducing new technologies • Includes, with reasonable logic and structure, some discussion of the positive and negative aspects of each of the issues identified	7–8
• Identifies one or two issues that management should consider when introducing new technologies • Includes some discussion of the positive and negative aspects of each of the issues identified, which may be linked to the introduction of new technologies	5–6
• Lists one or two relevant issues, eg training • Includes some description of these issues and attempts to link these to the introduction of new technologies	3–4
• Lists one or two relevant issues, eg training	1–2

Question 16 (b) (continued)

Answers may include:

- Training of staff
- Cost
- Equity
- Needs to be viable
- OHS
- Future directions of company
- Target market/demographic
- Legislation – EPA, local council
- Environmental - EIS