BOARD OF STUDIES
NEW SOUTH WALES

HIGHER SCHOOL CERTIFICATE EXAMINATION

1998
COMPUTING STUDIES
2 UNIT GENERAL

Time allowed—Three hours
(Plus 5 minutes reading time)

DIRECTIONS TO CANDIDATES

Section I (20 marks)

- Attempt ALL questions.
- Write your Student Number and Centre Number on the Answer Sheet provided.
- Complete your answers in blue or black pen, or in pencil on the Answer Sheet provided.

Section II (80 marks)

- Attempt ALL questions.
- Write your Student Number and Centre Number in the spaces provided on the first page of each question.
- Answer the questions in the spaces provided in this paper.

SECTION I

(20 Marks)

Attempt ALL questions.

Each question is worth 1 mark.

Select the alternative A, B, C or D that best answers the question.

Complete your answers in blue or black pen, or in pencil on the Answer Sheet provided.

USE THIS SPREADSHEET TO ANSWER QUESTIONS 1, 2 AND 3.

Members of a sporting club raised money through three different activities. The activities were: a raffle, a car wash and the sale of chocolates. The money made from each activity over a four-week period is shown in the spreadsheet below.

	A	B	C	D	E
1	WEEK	RAFFLE	CAR WASH	CHOCOLATES	TOTAL
2	1	$30	$56	$82	$168
3	2	$25	$42	$90	$157
4	3	$28	$28	$72	$128
5	4	$32	$32	$42	$106
6	TOTALS	$115	$158	$286	
7	Money raised				

1. Cells B2 : D5 represent the

(A) input area.

(B) label area.

(C) results area.

(D) calculation area.

2. Cell B7 requires a function to calculate the total money raised over the four weeks. A function to do this would be

(A) B2 : D5

(B) = SUM (E2 : E5)

(C) = ADD (B6 : E6)

(D) = E2 : E5 + B6 : D6

3. If the function = MIN(C2:D5) is applied to the sporting club spreadsheet, the value it returns is

(A) $25

(B) $28

(C) $30

(D) $32

4. A newspaper wishes to show the *trend* of a company's share price over the period of one trading week. The best type of chart to represent this information is

(A) pie.

(B) bar.

(C) line.

(D) column.

5. A database is stored on the computer network shown below. Part of the database is stored on each computer but can be accessed from any of the network computers.
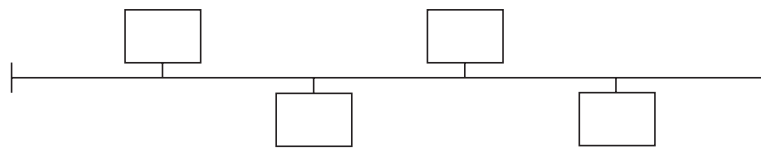
This type of database is called a

(A) bus database.

(B) serial database.

(C) distributed database.

(D) database management system.

6. The advantage of *table view* compared to *form view* in a database package is that it allows the user to

(A) sort the records.

(B) construct a search query.

(C) see a large number of records at once.

(D) see all the details of one particular record.

7. The *Birthday* column in the following database is in the DATE format (DD/MM/YY). A descending sort on *Birthday* is carried out on these five records. What is the surname of the last person after this sort?

Surname	First name	Phone number	Birthday
McScotch	Heidi	9666 5555	03/02/80
White	Bianca	9777 6666	12/07/80
Al Vaq	Fatima	9222 1212	06/11/80
Ng	Po	9555 6666	02/01/80
Swartz	Bob	9444 5555	23/04/80

(A) Al Vaq

(B) White

(C) McScotch

(D) Ng

8. First names and surnames are to be transferred from a database to a spreadsheet in the same integrated package. The most efficient method for transferring these data uses

(A) mail merge.

(B) the clipboard.

(C) a file conversion filter.

(D) a data interchange format file.

9. A frame buffer is a

(A) section of memory used to store the data for the current image being displayed.

(B) primary storage device used to contain both data and instructions generated by the user.

(C) component of output in graphics intended to be displayed as an entity to the screen.

(D) type of high speed memory designed to improve CPU or device performance by retaining the last item read.

10. A drawing package has been used to change Figure 1 to produce Figure 2.
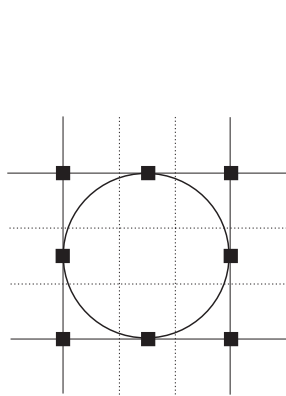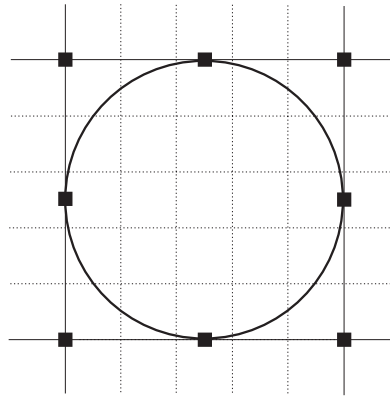
FIG. 1   FIG. 2

The type of graphics used by the package is most likely to be

(A)   cel-based.
(B)   path-based.
(C)   bit-mapped.
(D)   vector-based.

11. A graphics application in which editing can be simply carried out at the pixel level is most likely to be

(A)   a paint package.
(B)   a draw package.
(C)   an editing utility.
(D)   an image library.

12. The four images below are frames taken from a cartoon sequence. They illustrate a face gradually changing into a brick wall.
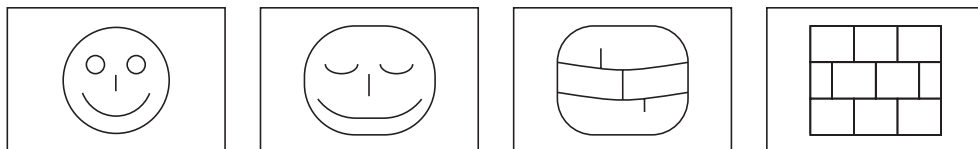
The technique used to produce this effect is called

(A)   warping.
(B)   tweening.
(C)   distorting.
(D)   morphing.

USE THE FOLLOWING TEXT SAMPLES TO ANSWER QUESTIONS 13, 14 AND 15.

Original page

Recent technological advances allow students access to the *resources* of the Internet.

Final page

Recent technological

advances allow students

access to the *resources* of

the Internet.

13. The difference between the word *resources* and the rest of the sentence is a change in

(A) font.

(B) type style.

(C) justification.

(D) stroke weight.

14. What adjustment has been made to the Original page of text to achieve the Final page of text?

(A) Kerning has been increased.

(B) Leading has been increased.

(C) Scrolling has been increased.

(D) Font size has been increased.

15. The page layout for the Original page and the Final page is

(A) portrait.

(B) paragraph.

(C) landscape.

(D) master page.

16. A graphic is used on each page of a 96-page desktop-published magazine. The graphic is changed for each monthly publication. Updating of the graphic is most efficiently done by

(A) creating a static link.

(B) creating a dynamic link.

(C) copying and pasting the graphic.

(D) importing the graphic using a file conversion filter.

17. Before two connected computers can communicate, the following set of variables MUST be compatible.

(A) Baud rate, parity, data bits

(B) Data bits, parity, computer platforms

(C) Parity, baud rate, communications software package

(D) Communications software package, computer platforms, baud rate

18. The file transfer protocol that allows the sending computer to transmit packets continuously without waiting for an acknowledgement from the receiving computer is

(A) Stuffit.

(B) V.42bis.

(C) X modem.

(D) Z modem.

19. Application software accessed by many terminals across a network requires a

(A) file server.

(B) mail server.

(C) print server.

(D) communication server.

20. The following e-mail message with attachments has been sent successfully.

To: AB@compa.edu.au, BC@compa.edu.au, BL@compc.edu.uk

From: ML@compa.edu

CC: FM@compa.edu.au, GM@compa.edu.au

Subject: ATTACHED HOLIDAY PICTURES

Attachments: DAY1.GIF, DAY2.GIF, DAY3.GIF, DAY4.GIF

Hi,

I have attached a picture of each day of my holiday so far. Wish you were here!

Cheers,

Monica

How many people should receive the e-mail message with all the attachments?

(A) 3

(B) 4

(C) 5

(D) 6

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SECTION II

Marks

(80 Marks)

Attempt ALL questions.

QUESTION 21. Spreadsheets (16 marks)

(a)   Explain the following spreadsheet terms.   **5**

    (i)   Label

....

....

    (ii)   Cell address

....

....

    (iii)   Function

....

....

    (iv)   'What if' prediction

....

....

    (v)   Relational operators

....

....

QUESTION 21. (Continued)   **Marks**

(b)   ORIGINAL SPREADSHEET 1   ORIGINAL SPREADSHEET 2

5

	A	B
1	Fruit	Number
2	Bananas	10
3	Apples	20
4	Oranges	30
5	Pears	40
6		=AVG(B2:B5)
7		
8		

	A	B
1	Fruit	Number
2	Bananas	10
3	Apples	20
4	Oranges	30
5	Pears	40
6		=(B2+B3+B4+B5)/4
7		
8		

(i)   A pie chart has been created from the information in the ORIGINAL SPREADSHEET 1. Label the four sections of the pie chart.
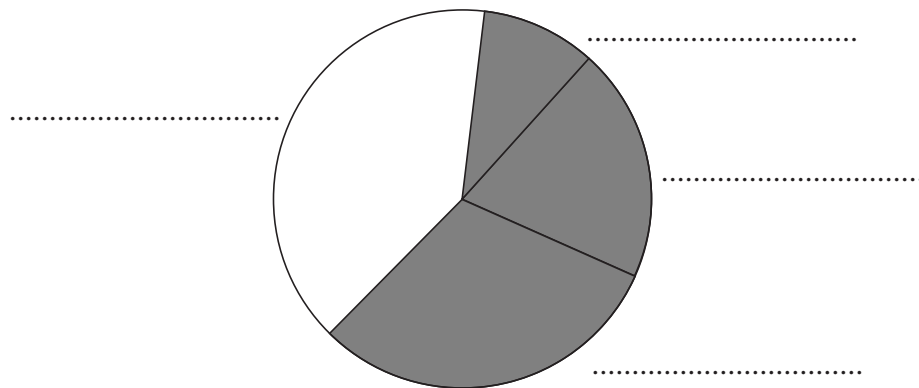
(ii)   In ORIGINAL SPREADSHEET 1, the cells B2 : B5 are highlighted. The cells are then sorted in descending order. What data will now appear in cell A2?

....

(iii)   For ORIGINAL SPREADSHEET 1, create a formula that would produce a circular reference in cell B8. Write your answer in the space provided below.

....

QUESTION 21. (Continued) **Marks**

(iv) Assume that a new row is inserted before row 3 in ORIGINAL SPREADSHEET 1 and ORIGINAL SPREADSHEET 2.

The word Apricots is now entered into the new cell A3 and the number 100 into the new cell B3 in each spreadsheet.

1. Which spreadsheet would calculate the correct average after the new row has been inserted?

....

2. Explain your answer.

....

....

....

QUESTION 21. (Continued)   **Marks**

(c)

	A	B	C	D	E
1	6	12			
2		3			
3			9		
4	=IF (A1>6, 3, C3-2)		1		
5	8	=(1+A1)*A5			
6					
7					
8	=(1+$B$1)*C3				
9					

6

Use the above spreadsheet to answer the following.

(i)   The spreadsheet has been poorly designed in terms of placement of information. Describe the purpose of two *layout areas* that should have been used to improve the design.

1.   ....

....

2.   ....

....

(ii)   The content of cell B5 is =(1+A1)*A5. Write the value that would appear in cell B5.

....

(iii)   The content of cell A8 is =(1+$B$1)*C3. It is copied down to cell A9. Write the value that would appear in cell A9.

....

(iv)   The formula in cell B5 is copied to the range of cells indicated by the shaded region C5 : E5. In the cells below, write the formulae as they would appear on the spreadsheet after they have been copied.

	C	D	E
5			

(v)   The formula in A4 is =IF(A1>6, 3, C3-2). Write the value that would appear in cell A4.

....

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Please turn over

QUESTION 22. Databases (16 marks)   **Marks**

The following case study relates to parts (a), (b) and (c).

(a) A car company keeps the record of details of all people enquiring about new   **5**
     cars. The salesperson fills out a card and stores each card in a manual filing
     system. As the company grows, management decides to store these details
     using an electronic flat file database. The information is still entered on cards
     but is then entered into the computer each week by the office staff. The name
     of the file is 'CAR SALES'.

   (i)   The company finds the use of the electronic flat file database quicker and
         easier than the manual system. Explain TWO other advantages for the
         company in using an electronic database compared to using the manual
         filing system.

         Advantage 1 ....

         ....

         Advantage 2 ....

         ....

   (ii) Discuss TWO design features of a database screen layout that will assist
         the data entry operator when using the system.

         Feature 1 ....

         ....

         ....

         Feature 2 ....

         ....

         ....
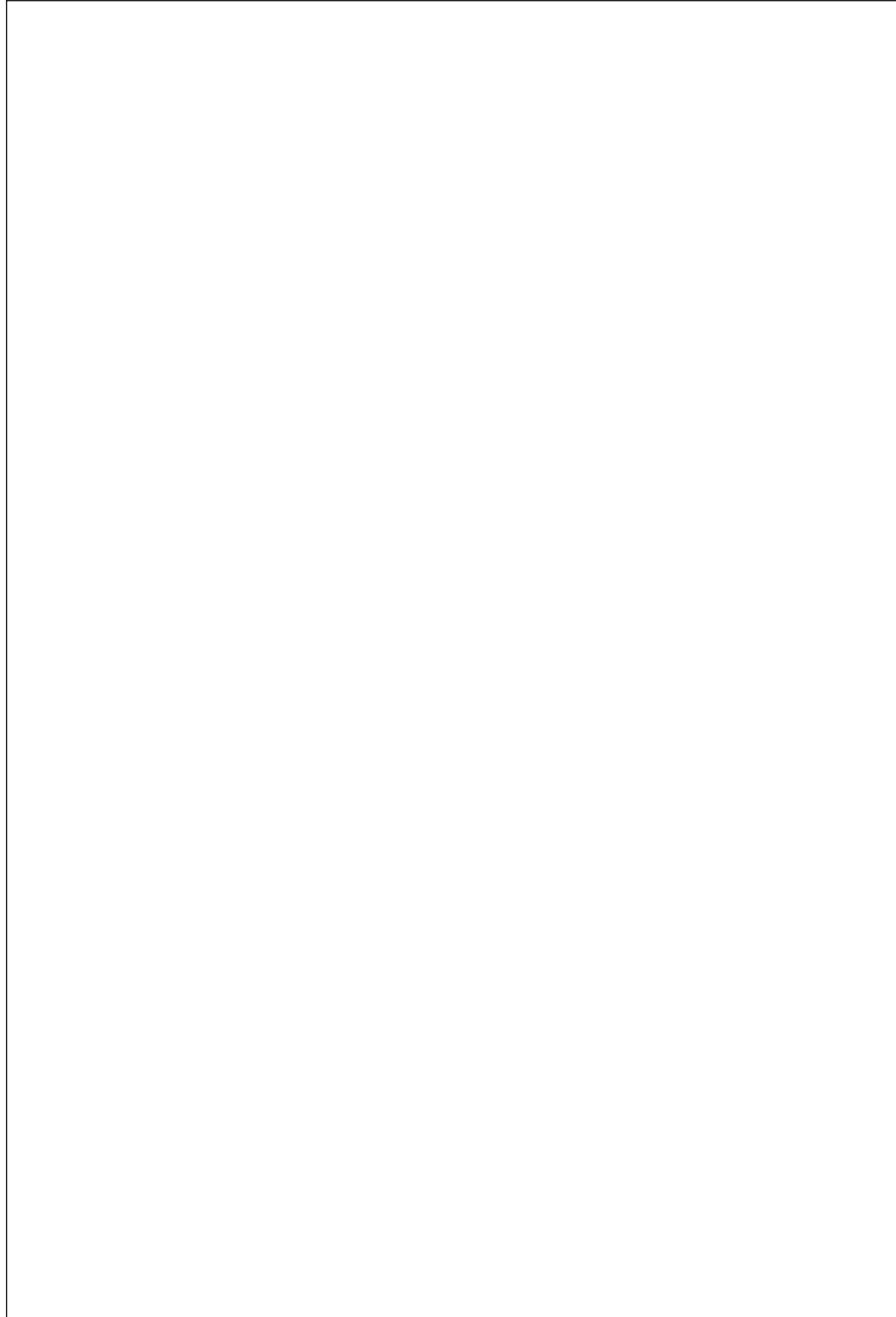
QUESTION 22. (Continued)   **Marks**

    (iii) The electronic flat file database called 'CAR SALES' has the following field names:

        Salesperson_code, Surname, Address, Maximum_price, First_name, Title, Telephone_number, Date_of_enquiry, Hot_prospect.

        In the space provided below, design a suitable data entry screen.

(b) A section of the table view of the electronic flat file database called 'CAR SALES' appears below. **6**

CAR SALES

Salesperson code	Surname	First name	Title	Address	Telephone number	Maximum price	Date of enquiry	Hot prospect
SMI 01	Goward	June	Mrs	32 President Avenue Kingsford 2032	9999999	$45 000	24/10/98	yes
SMI 01	Manson	Paula	Ms	1 Whitecross Place Red Rock 2456	46464646	$25 000	28/7/98	yes
SMI 01	Oczenaschek	Wilhelm	Mr	18 Bonus Avenue Whitebridge 2290	5555555	$28 000	20/7/98	no
SMI 03	Peasley	Jim	Mr	10 Eaton Place Bigga 2583	88888888	$32 000	23/10/98	no
SMI 01	Peasley	Laurel	Mrs	38 Smith Street Lakemba 2195	98989898	$34 000	9/10/98	yes
SMI 02	Peasley	Alan	Mr	94 James Road Homebush 2140	34343434	$31 000	27/9/98	no
SMI 02	Tran	Gemma	Mrs	5 Abrasive Road Menai 2234	12121212	$40 000	18/8/97	yes

QUESTION 22. (Continued)   **Marks**

(i)   How many records are shown in the file?

    ....

(ii)   Name the field that is most likely to be stored as a logical or Boolean value.

    ....

(iii)   The database has been sorted using two fields. Name the fields used in correct sorting order. State whether each field has been sorted in ascending or descending order.

	FIELD NAME	ASCENDING/DESCENDING ORDER
1ST SORT		
2ND SORT		

(iv)   The sales manager wishes to identify customers from the database who have made enquiries since 1 August 1998. The customers must also be willing to pay more than $30 000 and are considered to be hot prospects. Write a search specification that would find the required records.

    ....

    ....

    ....

(v)   If the search in part (iv) was carried out, write the surname and the first name of each customer selected.

    ....

    ....

    ....

(vi)   The database does not contain a *primary key*.

    1.   What is a *primary key*?

        ....

        ....

    2.   Describe a new field that could be created to include a *primary key* in this database.

        ....

Question 22 continues on page 18

QUESTION 22. (Continued)   **Marks**

(c)   (i)   The sales manager of the company decides to send out a letter to possible   **5**
              customers. Part of the text of this letter appears below.

              «FIELD_NAME» refers to the relevant information from the 'CAR SALES'
              database.

                                                            Apex Car Company
                                                            10 Schonky Road
                                                            Carss Park 2221
                                                            Telephone No. 241 241

                                                            2 November 1998

        ①
         ↘
        [   ]

        Dear «TITLE» [   ] ②

                           EXCITING NEW MODEL

        When you contacted us on «DATE_OF_ENQUIRY» you indicated that
        you were interested in spending up to «MAX_PRICE» on a new motor
        vehicle.

        We have the pleasure of announcing the arrival of the new Phantom.
        Please contact our company if you wish to have a test drive.

                                                            Yours faithfully

                                                            Peter Abbott
                                                            (Sales Manager)

2

QUESTION 22. (Continued) **Marks**

    1.   Name the method used here for integrating the database information into the word processed document.

        ....

    2.   Complete the template for the letter by writing the appropriate information in the sections marked ① and ②. Section ① should contain the full name and address.

    3.   It is noticed that the address in ① does not match the two-line address format shown on the company letterhead. What change has to be made to the database to achieve the same address format for the customer?

        ....

        ....

        ....

        ....

(ii) Paula Manson made enquiries and gave her personal details to the car company. Three months later, she started to receive advertising material from car loan companies. She suspects her details had been sold to a mailing list company by a mechanic of the car company. Discuss ONE ethical issue relevant to the sale of personal information.

        ....

        ....

        ....

        ....

(iii) Outline TWO measures that could be introduced by the person in charge of the database (database administrator) to prevent unauthorised personnel from accessing this information.

    1.   ....

        ....

    2.   ....

        ....

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QUESTION 23. Graphics (16 marks)

Marks

The following figures relate to parts (i) to (iv).

(a)
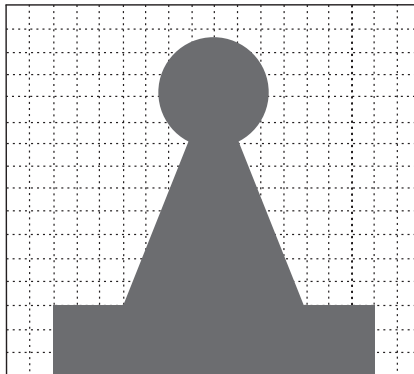
FIG. 1
(VECTOR-BASED)
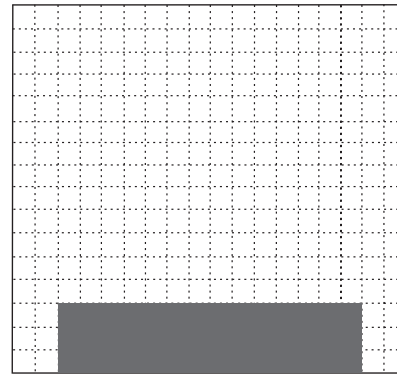
FIG. 2
(BIT-MAPPED)

6

Figure 1 and Figure 2 employ different methods to draw the chess piece.

(i) Complete Figure 2 to show a BIT-MAPPED image of the vector-based graphic in Figure 1.

(ii) Which figure would be created by a paint program?

....

(iii) 1. Which figure would use more memory?

....

2. Why would it use more memory?

....

....

(iv) Explain the difference in the processes used in vector-based and bit-mapped graphics to remove the circle on top of the chess piece.

....

....

....

....

526

Question 23 continues on page 22

QUESTION 23. (Continued)   **Marks**

    (v) Cel-based and path-based are two methods of producing animation. Describe the basic principles of EACH of these methods.

        1. Cel-based ....

            ....

            ....

        2. Path-based ....

            ....

            ....

(b)   (i) *Cropping* and *warping* have been used to create the final logo from the original graphic.   **4**

          Original graphic   Final logo
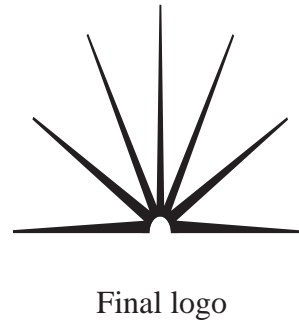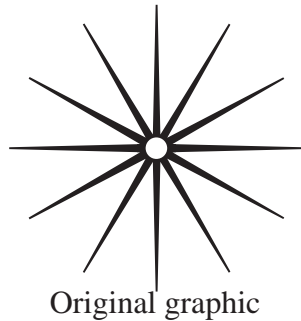
       Explain each term in relation to the production of the final logo. You may use diagrams to assist you with your explanation.

       1. *Cropping* ....

          ....

          ....

       2. *Warping* ....

          ....

          ....

QUESTION 23. (Continued)   **Marks**

(c)   (i)   A dance company wishes to set up a display to publicise its new   **6**
            production. *Animation*, *charts* and *diagrams* can be used in this display.
            For each of the situations below, name the most suitable method, and
            justify your answer.

            SITUATION 1. To show the dance sequence in the first scene.

            Method ....

            Justification ....

            ....

            SITUATION 2. To show the seating plan of the theatre.

            Method ....

            Justification ....

            ....

      (ii) A person scans an image but finds that it takes up too much memory to
            fit onto a floppy disk. Describe THREE methods that would ensure that
            the data fit on THIS floppy disk.

            1.   ....

                 ....

            2.   ....

                 ....

            3.   ....

                 ....

QUESTION 23. (Continued)   **Marks**

(iii) A portion of a diagonal line on a screen is represented below in Figure 1.
A close-up of part of the line is shown in Figure 2.
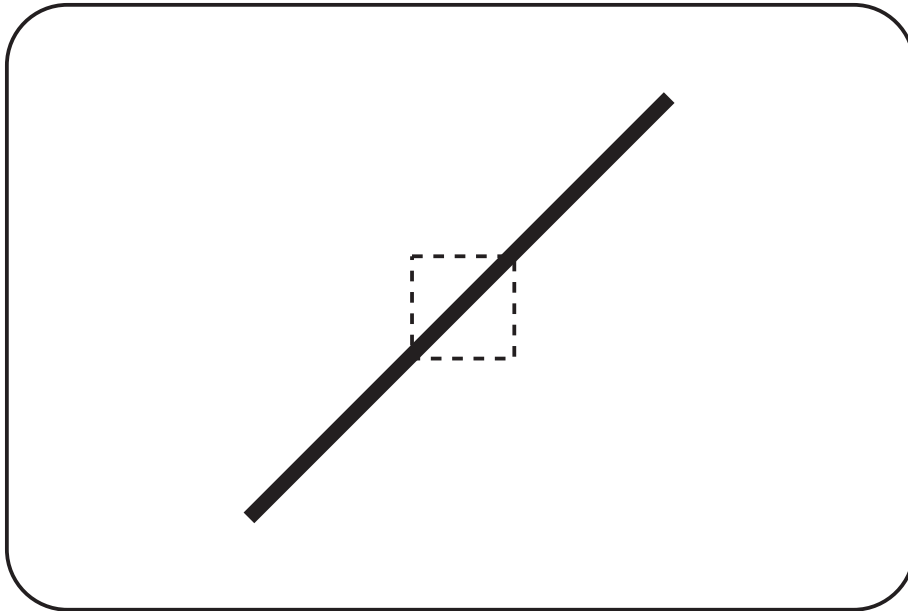
FIG 1. DIAGONAL LINE ON SCREEN
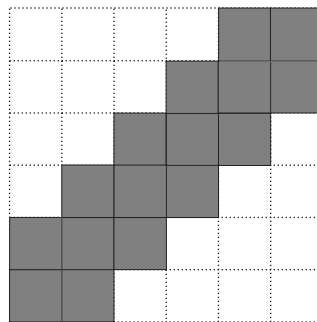
PART OF A DIAGONAL LINE

FIG 2. CLOSE-UP OF PART OF THE DIAGONAL LINE

Using the grid provided below, draw and label a diagram to show how
anti-aliasing techniques can be used to decrease the staircasing effect of
the diagonal line.
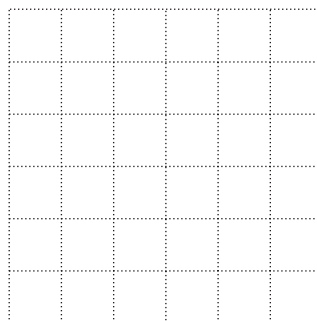
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QUESTION 24. Desktop Publishing (16 marks)   **Marks**

(a)   Explain the difference between the following pairs of desktop publishing terms.   **4**

    (i)   *Word wrap* and *text wrap*

        ....

        ....

        ....

        ....

    (ii)   *Cropped graphic* and *resized graphic*

        ....

        ....

        ....

        ....

    (iii)   *Pre-press (drafting) resolution* and *final output resolution*

        ....

        ....

        ....

        ....

    (iv)   *Gutter* and *margin*

        ....

        ....

        ....

        ....

Question 24 continues on page 26

QUESTION 24. (Continued)

(b) Copies of pages 21 and 29 from this examination booklet are reproduced below. These are used as sample pages to answer this part.

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QUESTION 23. Graphics (16 marks)   Marks

The following figures relate to parts (i) to (iv).

(a)   6

FIG. 1   FIG. 2
(VECTOR-BASED)   (BIT-MAPPED)

Figure 1 and Figure 2 employ different methods to draw the chess piece.

(i)   Complete Figure 2 to show a BIT-MAPPED image of the vector-based graphic in Figure 1.

(ii) Which figure would be created by a paint program?

....

(iii) 1. Which figure would use more memory?

....

2. Why would it use more memory?

....

....
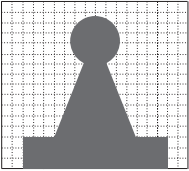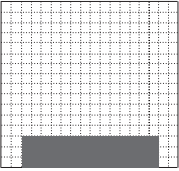
(iv) Explain the difference in the processes used by vector-based and bit-mapped graphics to remove the circle on top of the chess piece.

....

....

....

....

Question 23 continues on page 22

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QUESTION 25. Computer Communications (16 marks)   Marks

(a)   Explain the difference between the following pairs of computer communication   5
      terms.

(i)   *Baud* and *bps*

....

....

....

(ii) *Logon* and *password*

....

....

....

(iii) *Electronic mail* and *electronic bulletin board*

....

....

....

(iv) *Star network* and *bus network*

....

....

....

(v)   *PKZIP* and *MNP–5*

....

....

....

Question 25 continues on page 30

Complete the following table by filling in the missing information relating to features used on page 21 and 29. A completed example has been given.

Feature	Purpose	Example in sample pages
Border around graphic	To make graphic stand out from the text	FIG. 1 and FIG. 2 on page 21
Footer		
Bold		
Template		
		The labels FIG. 1 and FIG. 2 under the graphics on page 21

QUESTION 24. (Continued)   **Marks**

(c)   (i)   1.   What are *serif* fonts?   **8**

....

....

....

              2.   When are *sans-serif* fonts used in preference to *serif* fonts?

....

....

....

       (ii)   Describe the purpose of using the following desktop publishing facilities.

              1.   Drop caps ....

....

              2.   Callouts ....

....

              3.   Rulers ....

....

       (iii) Data interchange format files and file conversion filters are two methods of importing data into a desktop publication. Describe a situation where each would be appropriate.

              Data interchange format files ....

              Description ....

....

....

....

              File conversion filters...

              Description ....

....

....

....

       (iv)   What effect has Postscript[©] had on printing in desktop publishing?

....

....

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QUESTION 25. Computer Communications (16 marks)　　　　　　　**Marks**

(a)　Explain the difference between the following pairs of computer communication terms.　　**5**

  (i) *Baud* and *bps*

   ....

   ....

   ....

  (ii) *Logon* and *password*

   ....

   ....

   ....

  (iii) *Electronic mail* and *electronic bulletin board*

   ....

   ....

   ....

  (iv) *Star network* and *bus network*

   ....

   ....

   ....

  (v) *PKZIP* and *MNP–5*

   ....

   ....

   ....

　　　Question 25 continues on page 30
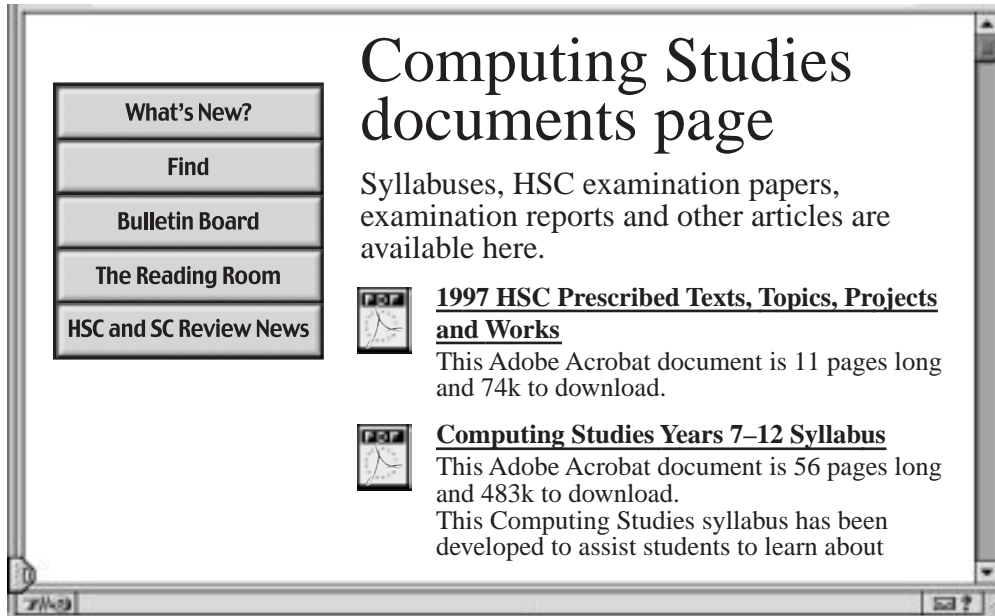
QUESTION 25. (Continued)   **Marks**

(b)   The Board of Studies has a remote database relating to Computing Studies.   **5**
      A sample screen is shown below.

(i)   Explain TWO advantages of having the 1997 Prescribed Texts, Topics,
      Projects and Works on a *remote database*.

      Advantage 1 ....

      ....

      Advantage 2 ....

      ....

(ii) Why is it important to log off from a remote database?

      ....

      ....

(iii) A modem was used in the process of accessing the remote database.
      Explain the purpose of the modem.

      ....

      ....

      ....

QUESTION 25. (Continued)   **Marks**

    (iv) You can download the Computing Studies Years 7–12 Syllabus file from the Board of Studies remote database. Explain downloading.

....

....

    (v) Describe TWO advantages of using data compression in downloading a file.

Advantage 1 ....

....

Advantage 2 ....

....

(c) Figure 1 shows three local area networks within the same building. The local   **6** area networks have been combined to form a larger network.
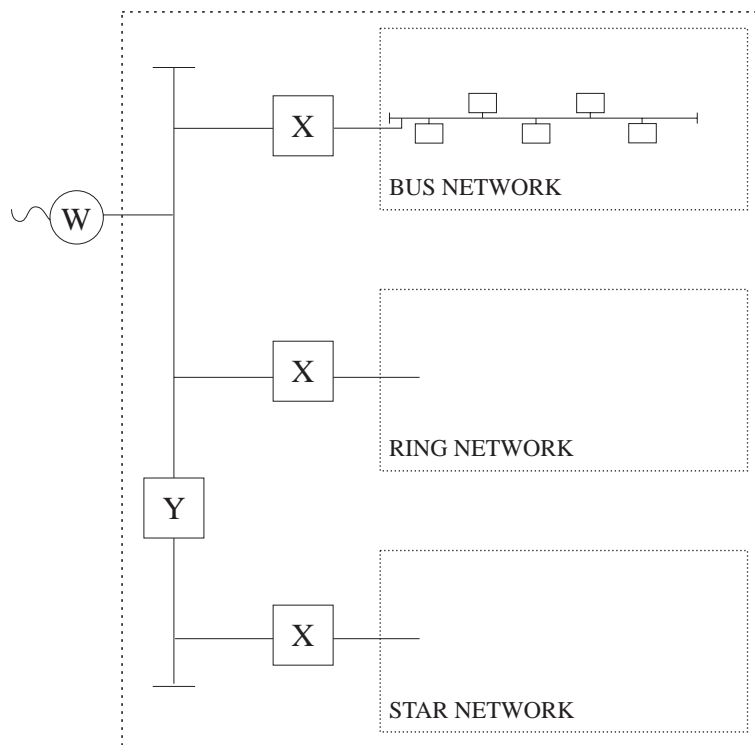

FIG. 1

In Figure 1 the BUS NETWORK has been drawn. Terminals (nodes) are indicated by ☐.

    (i) Draw RING and STAR networks in the appropriately labelled rectangles in Figure 1. Include at least FIVE nodes in each network.

QUESTION 25. (Continued) **Marks**

(ii) The three networks use different protocols. The devices marked ⬚X̲ allow the three networks to communicate with each other. Name this device.

....

(iii) The device marked Ⓦ is a modem with auto-dial capability. What are the advantages of using this type of modem?

....

....

....

(iv) Explain ONE advantage and ONE disadvantage of using a leased line instead of a normal telephone line.

Advantage ....

....

Disadvantage ....

....

(v) The device marked ⬚Y̲ is a mail server. Describe TWO functions of a mail server.

Function 1 ....

....

....

Function 2 ....

....

....

End of paper