



2001
HIGHER SCHOOL CERTIFICATE
HALF YEARLY EXAMINATION

Information, Processes and Technology

*Time allowed – Two hours
(Plus 5 minutes reading time)*

General Instructions

Reading time – 5 mins

Working time – 2 hours

Write using blue or black pen

Write your name on every page

Section I

Pages 2 – 7

Total marks **(20)**

Attempt Questions 1 – 20

Allow about 30 minutes for this section

Section II

Pages 8 – 11

Total marks **(40)**

Attempt Questions 21 – 22

Allow about 50 minutes for this section

Section III

Page 12

Total marks **(40)**

Attempt Questions 23 – 24

Allow about 40 minutes for this section

Section I.

Total marks (20)

Attempt Questions 1 – 20

Allow about 30 minutes for this section

Use the multiple-choice answer sheet.

Select the alternative A, B, C or D that **best** answers the question. Fill in the response oval completely. If a mistake is made put a cross through the circle.

1 a ☐ b ☐ c ☐ d ☐2 a ☐ b ☐ c ☐ d ☐3 a ☐ b ☐ c ☐ d ☐4 a ☐ b ☐ c ☐ d ☐5 a ☐ b ☐ c ☐ d ☐6 a ☐ b ☐ c ☐ d ☐7 a ☐ b ☐ c ☐ d ☐8 a ☐ b ☐ c ☐ d ☐9 a ☐ b ☐ c ☐ d ☐10 a ☐ b ☐ c ☐ d ☐11 a ☐ b ☐ c ☐ d ☐12 a ☐ b ☐ c ☐ d ☐13 a ☐ b ☐ c ☐ d ☐14 a ☐ b ☐ c ☐ d ☐15 a ☐ b ☐ c ☐ d ☐16 a ☐ b ☐ c ☐ d ☐17 a ☐ b ☐ c ☐ d ☐18 a ☐ b ☐ c ☐ d ☐19 a ☐ b ☐ c ☐ d ☐20 a ☐ b ☐ c ☐ d ☐

- 1 A Web-based mail-order company is investigating the most appropriate way for employees to conduct internal communication.

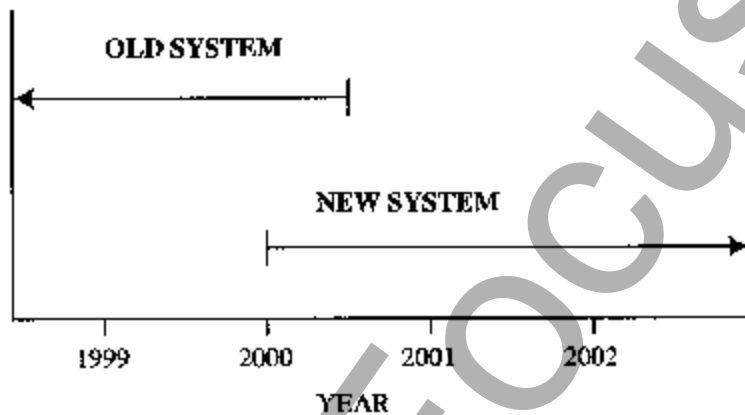
What is the most likely reason for the company to reject a paper-based system?

- (A) It is not economically feasible.
- (B) It is not technically feasible.
- (C) It does not fit the company's objectives.
- (D) It is not a feasible solution in the available time frame.

- 2 Ergonomics is the relationship between people and

- (A) Their work environment
- (B) The equipment they use
- (C) The climate
- (D) Their colleagues

- 3 As part of a project, a student has included the following diagram that illustrates the conversion of an old system to a new system.



What is this type of diagram called?

- (A) Decision table
 - (B) Gantt chart
 - (C) Schematic diagram
 - (D) System flowchart
- 4 An organisation has decided to systematically replace each employee's desk-top computer with a laptop computer over a three-year period. When each desk-top reaches a certain age, it is replaced with a new laptop.

What name is given to this type of conversion method?

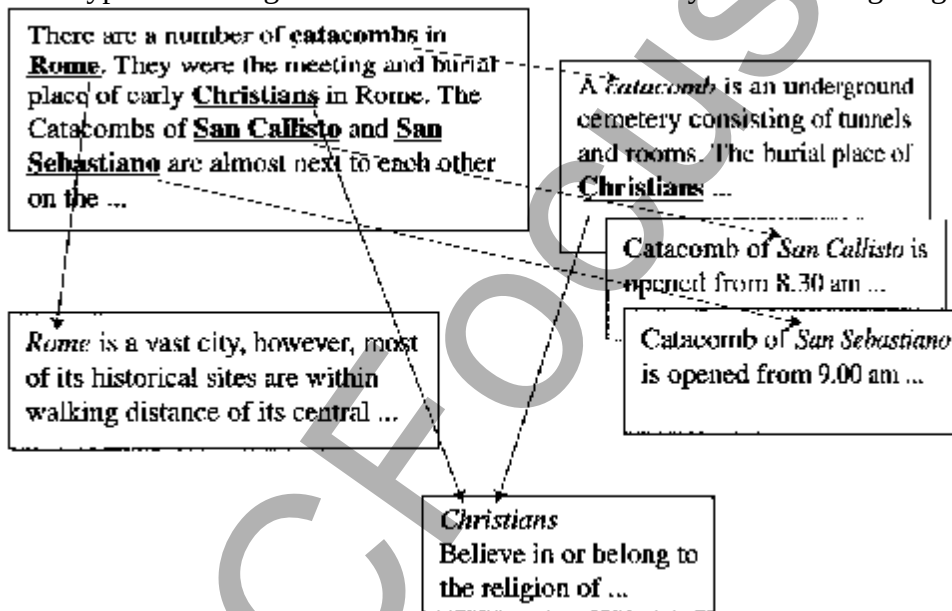
- (A) Pilot
- (B) Direct
- (C) Parallel
- (D) Phased

- 5 The uniform resource locator used to find the syllabus for this course is
http://www.boardofstudies.nsw.edu.au/syllabus99/infoprotech_syl.pdf

The segment 'www.boardofstudies.nsw.edu.au' is the

- (A) URL.
 (B) hypertext transfer protocol.
 (C) name of the resource file.
 (D) domain name of the server containing the resource.
- 6 What is the best way for a university to organise data about students and the courses in which they are enrolled?
- (A) On a course web-site
 (B) In a relational database
 (C) In a flat-file database
 (D) As hypermedia

- 7 What type of data organisation method is illustrated by the following diagram?



- (A) Hypertext
 (B) Flowchart
 (C) Top-down design
 (D) Relational database
- 8 Which of the following is the best way to validate information retrieved from the Internet?
- (A) Access the information using a variety of search engines.
 (B) Determine the number of visitors the Internet site has had.
 (C) Verify information with a variety of other sources.
 (D) Identify the author of the information.

Name: _____

- 9 It has been decided to network a small number of users in an office so that they can all access one database at the same time. A computer is required to control access to this database. What is this computer called?
- (A) File Server
(B) Client Server
(C) File / Client Server
(D) Print / Client Server
- 10 Internet service providers gather clients' credit card details across the Internet and store these details. They protect these details by creating a file server that
- (A) Allows no Internet access.
(B) Only allows uploading across the Internet.
(C) Only allows downloading across the Internet.
(D) Allows both uploading and downloading across the Internet.
- 11 A database has been created by a trading company to assist people buying a car. The database is to be linked to a web-site on the Internet. A portion of the data dictionary for this database is included below.

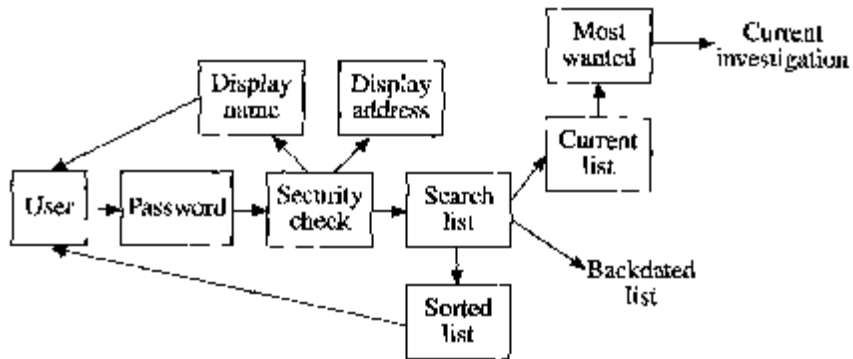
FIELD	DESCRIPTION / COMMENTS
Address	Address of current owner
Suburb	Suburb current owner lives in
Advertisement number	Allows present owner to protect their privacy
Make of car	eg Holden
Model of car	eg Barina
Telephone number	Telephone number of current owner
Price	Selling price of car

The most appropriate and ethically responsible display of this information by the trading company on the web-site would include the fields of

- (A) Address, Suburb, Advertisement number, Make of car and Price
(B) Suburb, Advertisement number, Make of car, Telephone number and Price
(C) Suburb, Make of car, Model of car and Telephone number
(D) Suburb, Advertisement number, Make of car, Model of car and Price
- 12 There are two columns missing in the above Data Dictionary. They are
- (A) Data size and Field Name
(B) Data type and Field size
(C) Logical Data and Field width
(D) Primary Key and Data width

- 13 Which set of variables must be compatible before two connected computers can transmit to each other?
- (A) Baud rate, parity and number of data bits
 - (B) Parity, number of data bits and computer platforms
 - (C) Parity, baud rate and communications software package
 - (D) Communications software package, computer platforms and baud rate
- 14 The following seven-bit ASCII character and parity bit were transmitted as
- | ASCII character | Parity bit |
|-----------------|------------|
| 1011010 | 0 |
- They were received as
- | ASCII character | Parity bit |
|-----------------|------------|
| 1010010 | 1 |
- Which statement accurately reflects this situation?
- (A) The data were sent as odd parity and would be interpreted by the receiver as correct.
 - (B) The data were sent as odd parity and would be interpreted by the receiver as incorrect.
 - (C) The data were sent as even parity and would be interpreted by the receiver as correct.
 - (D) The data were sent as even parity and would be interpreted by the receiver as incorrect.
- 15 The name of the computer that is connected to a network that users can operate is
- (A) Workstation
 - (B) Print server
 - (C) File server
 - (D) Hub
- 16 In a word processed document, the font size or font can be changed, headings can be emphasised and paragraphs can be indented. These are examples of
- (A) Editing
 - (B) Documentation
 - (C) Saving
 - (D) Formatting
- 17 After hypertext on a web page is clicked the linked page is
- (A) Uploaded to your computer
 - (B) Downloaded to your computer
 - (C) Published to your computer
 - (D) Saved to your computer
- 18 A tuple is a
- (A) A row in a table
 - (B) A record in a table
 - (C) A record in a database
 - (D) A row in a spreadsheet

19 The diagram represents a system development tool. It is called a



- (A) Gantt chart.
- (B) Systems flowchart
- (C) Hierarchy chart.
- (D) Data flow diagram.

20 Undesirable duplication of data within a database is

- (A) Data redundancy
- (B) Data bias
- (C) Data integrity
- (D) Data independence

Name: _____

Section II.

Total marks (40)

Attempt Questions 21 – 22

Allow about 50 minutes for this section

Answer the questions in the space provided.

Question 21 (20 marks)

These three tables form a database from Ravese Hardware for the month of March. This is an online database that customers can order from directly from the Internet. Orders can also be taken by E-mail.

Customer

CustomerID	Name	Address	Suburb	InvoiceNo
1000	Isho Sands	Beverly Rd	Cecil Hills	97003
1001	Klessattel Dance	Queen St	Cecil Hills	97009
1002	Sharma Training	Rudd Rd	Cecil Hills	97005
1003	Popovic Fantasies	Blaxland Rd	Cecil Hills	97006

Invoice

InvoiceNo	Courier	ProductNo	Amount	CustomerID
97001	TNT	2001	\$23.00	1000
97002	Couriers	2003	\$34.00	1001
97003	TNT	2004	\$54.00	1002
97004	TNT	2002	\$12.00	1003
97005	Comet	2001	\$34.00	1003
97006	Comet	2005	\$21.00	1000
97007	TNT	2005	\$26.00	1000
97008	TNT	2004	\$65.00	1004
97009	TNT	2003	\$76.00	1003
97010	Comet	2005	\$109.00	1003

Products

ProductNo	Product	InStock
2001	Timber	Yes
2002	Nails	Yes
2003	Glue	Yes
2004	Rope	Yes
2005	Balls	Yes

Using these three tables answer the following questions.

- (a) (i) List the products that Popovic Fantasies purchased, the courier that was used and the total price.

- (i) Explain how the three tables are related to each other.

Name: _____

- (b) The Olympic Games committee has set up a seat booking system for all of its events. Part of the database is as follows.

PERSON	EVENT_SEATS	EVENTS
• Family_name • Given_names • Address • Events_required • Priority • Age • Disability_type • Health_card • Disability_permit_number • Medicare_number • Group_code • Deposit_amount • Credit_card_number • Valid_credit_card?	• Event_number • Seat_number • Disability_access • Person_name • Group_code	• Event_number • Event_title • Venue • Date • Time

- (i) What is the primary key of the EVENT-SEATS file?

- (ii) Why is Family-name in the PERSON file not suitable as a primary key?

- (iii) For the PERSON file:

- (1) Give an example of a logical field;

- (2) Give an example of a numeric field;

- (3) Why is Age a poor choice for a field? What would be a better field to use?

- (iv) If selection and mail-merge are to be used for sending out information to applicants,

Why would it be better to split Address into more fields? Give names to these fields that suggest the contents

Question 22 (20 marks)

(a) Explain the major difference between the following pairs of terms.

(i) Simpler mode and half-duplex mode

(ii) Protocol and Handshaking

(iii) X-modem and Z-modem

(iv) Terminal and host computer

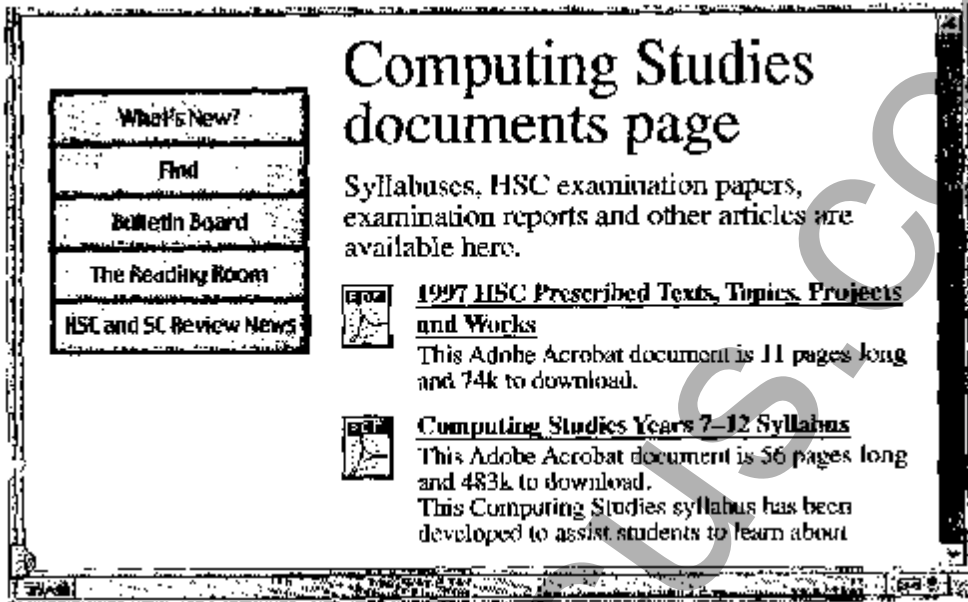
(v) Optical fibre and coaxial cable

(b) (i) List and explain TWO parameters that must be set for two computers to be able to communicate with each other.

Name: _____

- (ii) Name ONE advantage and ONE disadvantage for a company using a leased line for communication with one of its branches.

- (c) A remote database relating to Computing Studies is available on an electronic bulletin board system. A sample screen is shown below.



The information on the 1997 HSC Prescribed Texts, Topics, Projects and Works can be downloaded from the bulletin board by selecting the option in shown in the above picture.

- (ii) State TWO technical factors that would affect the speed with which this information would be received by a remote computer.

- (ii) Discuss TWO advantages of publishing the 1997 HSC Prescribed Texts, Topics, Projects and Works in a remote database rather than on a CD-ROM.

Section III.

Total marks (40)

Attempt Questions 23 – 24

Allow about 40 minutes for this section

Answer the questions in the writing booklet provided. Extra writing books are available

Question 23 (20 marks)

- (a) Security has been raised as an issue by the community in making any data available electronically.
- (i) Explain why security could be a problem.
- (ii) State TWO measures that system designers could take to overcome these security problems.
- (b) CRC, Checksum and parity all forms of error detection when transmitting computer files
- Explain how they each work and indicate which is the most effective.
- (c) Star, bus and ring are three Topologies used for local area networks.

Represent EACH topology diagrammatically using a square ☐ to represent a node. You must show at least FIVE nodes and the appropriate physical connections.

Question 24 (20 marks)

- (a) Bob's Book Company offers an Internet service for customers who can:
- register preferences for categories of books they prefer to buy;
 - place orders for books using their credit card.

The company stores the data in a database.

Discuss TWO methods that could be used to keep customer credit card details secure against unauthorised access.

- (b) Research has shown that book preferences are a good indicator of customer preferences for types of music and videos.

What are the ethics of a book company passing on data about customers and their book preferences to video and music companies?

- (c) The Customer_Preference file (table) in the database has the following fields:
- Customer_number;
 - Books_category_preference.

Write an SQL statement to select all customers who might be interested in buying a new book about Asian politics.