

INFORMATION PROCESSES & TECHNOLOGY
2008 INTERNAL HSC EXAMINATION

Term 4 | Assessment Weighting: 10%



TIME ALLOWED

60 minutes, plus 3 minutes reading time

ALLOCATION of MARKS

TOTAL: **50 marks**

SECTION A: **20 marks**

Multiple choice: attempt ALL questions

Mark your answers on the answer sheet provided

Each question is worth 1 mark

SECTION B: **30 marks**

Extended answer: attempt ALL questions

Mark your answers in the spaces provided for each question

Each question's mark allocation is indicated in brackets

SECTION A: ANSWER SHEET

Question 1 to 20: Multiple Choice

Mark the correct box with an X.

QUESTION	A	B	C	D
1				X
2			X	
3			X	
4				X
5		X		
6		X		
7				X
8				X
9		X		
10		X		
11	X			
12			X	
13			X	
14	X			
15		X		
16		X		
17		X		
18				X
19				X
20				X

SECTION A

Multiple Choice

1. An organisation has decided to systematically replace each employee's desktop computer with a laptop computer over a 3-year period. When each desktop reaches a certain age, it is replaced with a new laptop.

This is an example of:

- a. Parallel conversion
 - b. Pilot conversion
 - c. Direct conversion
 - d. Phased conversion
2. Prototyping is a method of developing solutions to problems that:
- a. Describes the processes of the system
 - b. Duplicates the existing system
 - c. Demonstrates the features to be included in the final product
 - d. Is used to convert a Beta version of a product into the final version
3. Before a loan is approved, a person applying for a personal loan at the *Last Chance Bank* must have:

Conditions	Rules				
Customer of the bank	Y	N	N	Y	Y
Income > \$ 15 000	N	Y	N	N	N
With guarantor	N	Y	N	Y	N
Action					
Loan Approved	N	Y	N	Y	N
Loan Rejected	Y	N	Y	N	Y

Which loan will the bank approve?

- a. Customer of the bank with income of \$18 000
- b. With income of \$15 000 with guarantor
- c. Customer of the bank with guarantor
- d. Customer of the bank with income of \$ 10 000

4. A museum decides to adopt an automated ticket selling system and develops a prototype of the system at the initial stage of system development.

The main purpose of the prototype is:

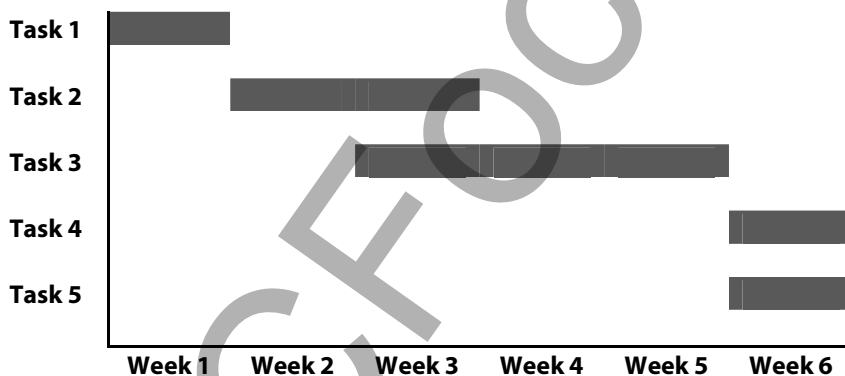
- a. Participant training
- b. Cost-benefit analysis
- c. Documenting the new system
- d. Clarification of system requirements

5. A project plan is formulated for the development of a new DVD-rental website.

Which of the following would likely be included?

- a. Feasibility study, Gantt chart, funding management plan
- b. Scheduling of tasks, communication management plan, feasibility study
- c. Feasibility study, funding management plan, communication management plan
- d. Communication management plan, funding management plan, scheduling of tasks

6. This Gantt chart shows the task scheduling of a project.



Using the information provided in the Gantt chart, which statement about the relationship of the tasks is NOT necessarily correct?

- a. The project takes 6 weeks to complete
- b. The outputs of Task 1 are the inputs for Task 2
- c. Task 4 and Task 5 can be done at the same time
- d. Delay in Task 4 will have minimal impact on Task 5

7. Which is a main purpose of using data flow diagrams and system flowcharts in system development?
- Project evaluation
 - Designing test data
 - Participant training
 - Understanding the existing system

8. A company plans to install a new computerized system for all its employees. The new system will focus on automation and uses technologies such as voice recognition and touch-sensitive screens instead of the traditional devices such as keyboards and mice.

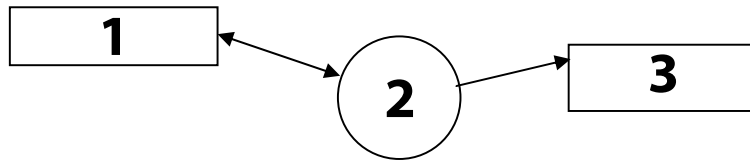
Which issue has the greatest impact to the success of the new system?

- Equity
 - Ethics
 - Privacy
 - Changing nature of work
9. A company, which presently uses memos placed in named 'pigeon-holes' (shelf spaces) for daily communications, proposes a new system based upon email.

Which of the following represents a likely social challenge?

- Staff acquiring the necessary typing skills
 - Staff acquiring the habit of checking for new mail
 - Keeping permanent records
 - Forwarding of replies to memos
10. Which of the following is a key potential advantage of a web-based tutorial over a CD-ROM based tutorial?
- Cross-platform compatibility
 - Opportunity for feedback from tutors
 - Better quality graphics and animated segments
 - Cost savings

11. Consider the following context diagram.



The items labelled 1, 2 and 3 respectively are:

- a. External entity, process and data store
- b. Process, external entity and data store
- c. Data store, process and external entity
- d. External entity, data store and process

12. An arcade game called SNAKEZ has a gameplay design where players moving around a maze collect rewards to gain lives and lose lives when touched by poisonous snakes.

The decision table shown below summarises the game’s logic.

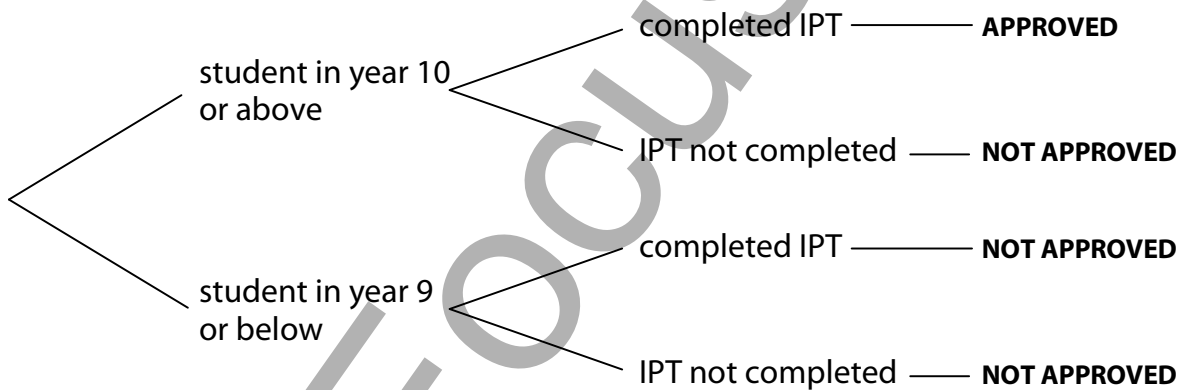
CONDITIONS					
rewards collected > 5	✓	x	x	x	x
hit by > 3 snakes	x	x	✓	x	x
lives = 10	x	✓	x	x	x
lives = 0	x	x	x	✓	x
round wins = 3	x	x	x	x	✓
ACTIONS					
announce win round add 1 to rounds	x	✓	x	x	x
announce end game	x	x	x	✓	✓
win life	✓	x	x	x	x
lose life	x	x	✓	x	x
set rewards to zero	✓	✓	x	✓	x
set lives to zero	x	✓	x	✓	x
add name to Hall of Fame	x	x	x	x	✓

How does a player win the game?

- a. By collecting five rewards
- b. By collecting 10 lives
- c. By achieving 10 lives three times in the game
- d. By collecting five rewards and winning 10 lives

13. The term information technology refers to:
- a. The software designed for a system
 - b. The knowledge base of technical personnel
 - c. Software and hardware used in a computer system
 - d. The database (DBMS) at the heart of the system

14. Consider the following diagram.



This chart is known as a:

- a. Decision tree
- b. Hierarchy chart
- c. System flowchart
- d. Pathway chart

15. The decision table that accurately reproduces the logic of the diagram in Q14 is:

a.

CONDITIONS	RULES			
Student in year 10 or above	Y	N	Y	N
Student completed IPT	Y	Y	N	N
RESULT				
Approved	N	N	N	Y
Not approved	Y	Y	Y	N

b.

CONDITIONS	RULES			
Student in year 10 or above	Y	N	Y	N
Student completed IPT	Y	Y	N	N
RESULT				
Approved	Y	N	N	N
Not approved	N	Y	Y	Y

c.

CONDITIONS	RULES			
Student in year 10 or above	Y	N	Y	N
Student completed IPT	Y	Y	N	N
RESULT				
Approved	N	Y	Y	Y
Not approved	Y	N	N	N

d.

CONDITIONS	RULES			
Student in year 10 or above	Y	N	Y	N
Student completed IPT	Y	Y	N	N
RESULT				
Approved	Y	Y	Y	N
Not approved	N	N	N	Y

16. Which of the following is TRUE for all context diagrams?

- a. Data flows should be included, but need not be labelled
- b. A single process represents the entire system
- c. Only entities that are part of the system are shown
- d. Every entity should provide and obtain data from the system

17. A newsletter production system is required for a local library. After initial analysis, it is certain that the library has the equipment for the production of newsletters, but the analysts are uncertain whether the librarians can be trained by the end of the year when the newsletters must be published.

What areas of feasibility are of concern in the consideration of this proposed system?

- a. Technical and economic
 - b. Operational and scheduling
 - c. Organizational and technical
 - d. Scheduling and organizational
18. In a high school library, books can be borrowed by using a borrower's card that has a magnetic strip uniquely identifying the borrower. Which information process is involved when the borrower card is "swiped" to read its magnetic strip?
- a. Organising
 - b. Processing
 - c. Storing and retrieving
 - d. Collecting

19. A company has decided that its information system is inadequate for its future needs. The participants in the system are uncertain of their requirements for the new system.

What would be the best approach to help solve this problem?

- a. Construct a project plan for developing the new system
 - b. Tell the participants what their requirements are
 - c. Construct a prototype of an improved information system
 - d. Interview the participants, using active listening skills
20. In the development of a new computer-based system, social and ethical issues should be considered:
- a. In the earliest stages of the cycle
 - b. During the later stages of the cycle
 - c. At the design stage of the cycle
 - d. Throughout all stages of the cycle

SECTION B

Extended Answer

QUESTION 21

[13 marks]

The *Roads and Traffic Authority* (RTA) is an organization that uses a database information system. Its purposes are to ensure vehicles are safe and to provide individuals with a driver's licence. The RTA plans to re-design their information system over the course of a year.

When the owner of a vehicle needs to renew the registration, he or she requires a pink slip and a green slip. These forms are presented to the RTA staff along with the old Certificate of Registration. Computer terminals are used to update the data, and a central database is automatically updated with the details of the vehicle, such as plate number, model and engine number. The owner pays the registration. Updated details are then printed on a new Certificate of Registration, which is issued to the owner.

- a. Create a project plan for the RTA's database information system by filling in the table below. [9]

Issues & Focus	Relevant Details
Who? (Participants)	RTA staff (data entry and database maintenance) System developers (internal and contractors)
What? (Objectives)	Ensure vehicles are safe Provide individuals with a driver's licence
When? (Timeline)	Twelve months
How? (Methods)	Computer terminals used to update central database <?> Conversion method (e.g. pilot, at one branch)
Resources? (IT)	Computer terminals, file server, printers, database software
Expected results? (Outcomes)	Streamlined and centralised vehicle and driver database that achieves the two system objectives (see above)

- b. Draw a data flow diagram representing the process of renewing a motor vehicle's registration. [4]

Must include:

- Pink slip, green slip, old certificate of registration (entities) – 1
- Central database (data store) – 1
- Update registration details, new registration printed (processes) – 1
- Logical order / diagram key

QUESTION 22

[12 marks]

Australian Idol is a popular TV show shown on the Channel Ten network. Performers are selected during a nation-wide screening process, and then these perform on live national television. Votes for each of the performers are accepted by phone or SMS and tallied in real time, and the performer with the least amount of votes each week is removed from the competition until only one performer is left.

- a. When the show was first pitched, Channel Ten carried out a feasibility study on the information systems that would be required for the show to run. Choose TWO of the four types of feasibility and explain the issues relevant to this situation. [4]

Financial feasibility – can the users afford the purchasing, installation and running costs of the system?

Technical feasibility – sufficient technical knowledge/experience to use the system? Is the technology readily available?

Operational feasibility – will the solution cause too many changes in the organisation? Will they be able to cope with the changes?

Schedule feasibility – can the system be implemented within the available time?

- b. One of the major information systems required for *Australian Idol* was the system that received and tallied up all the text message votes sent in by the viewing public. Construct a context diagram that represents this system. [4]

Must include:

- Vote tallying system
- Text message votes
- Vote database
- Australian Idol staff

[4]

- c. Below right is a scrambled list of items belonging to a system flowchart that describes how data is processed when someone makes a vote via text message. Arrange them in the correct order and use the correct symbols to create the system flowchart.

See diagram on final page.

QUESTION 23**[5 marks]**

Amazon.com, the online book store, relies heavily on a wide variety of information systems for its day-to-day functions.

- a. Describe some of the sources of data for Amazon's transaction processing system, and give an example of how some of this data will be used by Amazon's management information system. **[3]**

Sources of data for Amazon's TPS

- Customers
- Website visitors
- Banks
- Credit card companies
- Couriers/freight companies
- Publishers

How this data will be used by their MIS

- E.g. Amazon can collect and relate this data together, identifying customer trends that may assist them in selling more titles. For instance, data analysis may reveal that customers who live in areas without major bookstores are the most consistent purchasers, and thus may send out postal advertising to capitalise on such areas.

- b. Explain how Amazon might benefit from a decision support system, giving a concrete example. **[2]**

Due to the massive amounts of data being collected, Amazon cannot hope to rapidly keep track of customer trends in a useful way. A DSS could assist by, say, taking the MIS reports on website traffic, and identifying the sections of the site with the highest usage. On this basis, the DSS may recommend that Amazon sell screen space on these pages to advertisers at an increased rate (due to their higher exposure). They can then point to the DSS for empirical evidence to justify this increased rate, thus securing greater advertising revenue for the company.

- END OF EXAM -

