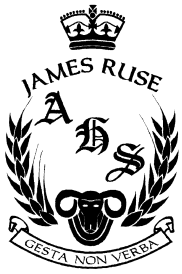
 Name:_____

INFORMATION PROCESSES & TECHNOLOGY

2008 PRELIMINARY EXAMINATION

Term 3 (Final Exam) | Assessment Weighting: **30%**



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				
2				
3				
4				
5				
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18				
19				
20				

SECTION A

Multiple Choice

1. Text data:
    a. Represents individual symbols
    b. Is the simplest type of data
    c. Is represented by numbers in accordance with ASCII code
    d. All of the above

2. Choose which statements are correct:
    I. After being collected, data always has meaning and/or purpose.
    II. After being analysed, data always has meaning and/or purpose.
    a. I only
    b. II only
    c. Both I and II
    d. Neither I nor II

3. Which of the following is an example of *organising*?
    a. Sorting data into a particular order
    b. Re-arranging data so that it is easier to read
    c. Converting data from one type into another
    d. Locating particular data that has been lost amidst unimportant data

4. Which of the following is unable to process the data it is accessing directly?
    a. Microsoft Word
    b. Microsoft Excel
    c. Microsoft Internet Explorer
    d. Microsoft Access

5. Which of the following storage devices is not necessary for a computer to function?
    a. ROM
    b. Hard disk
    c. RAM
    d. Registers

6. Which of the following is NOT a method of analysis?
    a. Visually portraying data in a table or chart
    b. Identifying biased and unbiased data
    c. Combining data into mathematical equations
    d. Creating a simulation from collected data

7. One of the main reasons for storing and retrieving data is to *handle system interrupts*. This refers to:
    a. Keeping a backup of data to revert to in case of errors
    b. Halting the current processing task so the system can do something else
    c. When a computer user is interrupted by another person
    d. All of the above

8. Westmead Private is a large hospital in Western Sydney. Which of the following shows the data its staff might collect and the information they might produce as a result?

ANSWER	DATA	INFORMATION
a.	Times of staff members starting and ending work	Average length of work shift
b.	Number of visitors in different departments (e.g. cardiology)	Most prevalent disease/illness
c.	Number of vehicles currently in hospital car park	Usage statistics for ambulances
d.	Evaluation forms from patients describing their experiences	Quality of nursing staff

9. Which of the following is an example of *local storage*?
    a. USB drive
    b. Email account
    c. Hard disk
    d. CD

10. Modems:
    a. Are necessary for computers to communicate with each other
    b. Create sounds that go over phone lines like the human voice
    c. Can store data
    d. Connect to a computer through the Firewire port

11. A student performs a text search on his essay for the words "information technology". Which of the following is true?
    a. The search will return exact matches to the search key
    b. Searching for "information OR technology" will produce less results
    c. Searching for "information AND technology" will produce less results
    d. The search key utilises wildcards

12. PGP stands for:
    a. Pretty Good Privacy
    b. Personal Global Positioning
    c. Processing Group Protocol
    d. Portable Graphic Projector

13. Which of the following does NOT increase the speed of the analysing process?
    a. Wider data bus
    b. Higher FLOP rating
    c. Greater storage space
    d. Faster clock speed

14. With regard to transmitting and receiving, duplex means:
    a. Double data rate
    b. Data travelling bi-directionally
    c. Printing on both sides, not just one
    d. Sending several signals simultaneously

15. Which of the following is NOT present in a computer?
    a. Bus
    b. Train
    c. Clock
    d. Port

16. Which of the following is NOT true of the analysing process?
    a. It often requires a large amount of storage space
    b. It changes the data that it is performed upon
    c. It is improved by the use of powerful processors
    d. One of its purposes is to assist in decision-making

17. Distributed processing:
    a. Requires specially-designed software
    b. Is faster than centralised processing
    c. Is cheaper than centralised processing
    d. All of the above

18. Which of the following is NOT true of *baud*?
    a. It refers to the number of distinct signal events in a second
    b. It was named after a man named Baudot
    c. It is a measure of transmitting & receiving speed
    d. It describes the number of bits that are transmitted in a second

19. Which of the following storage technologies currently has the greatest storage capacity?
    a. Optical
    b. Flash memory
    c. Transistor
    d. Magnetic

20. The process of converting data from analogue to digital for transmitting is known as:
    a. Modulating
    b. Digitising
    c. Encoding
    d. Filtering

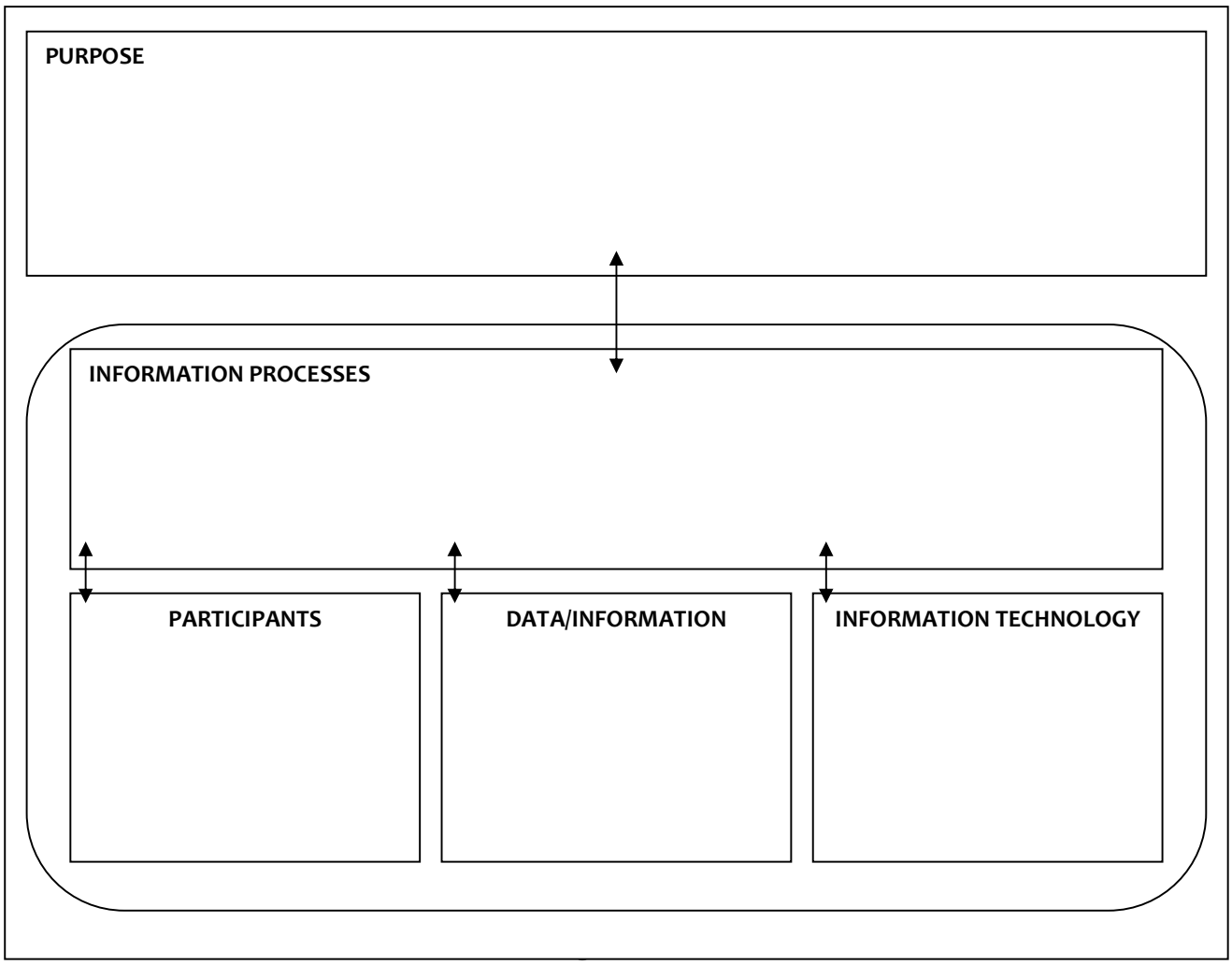
SECTION B

Extended Answer

QUESTION 21 **[16 marks]**

The James Ruse building committee is beginning an investigation of the various building developments that exist around the school. They have two aims: (*a*) to evaluate the current structures on the property and (*b*) to ascertain what future building projects should be prioritised above others. An information system is being designed to facilitate this investigation, and it is based around an online survey on the school intranet. Students and teachers will submit comments on structures like the lecture theatre, technology wing and new bus bay, as well as describe what new structures they think would benefit the school most. There is also a paper form version of the survey that parents and community members can fill in and submit. All of this data is to be combined in a database and used to create a report on the school's buildings, including recommendations on future buildings.

a. Complete the labelled spaces in the diagram below by providing EXAMPLES of each item from the information system scenario described above. **[8]**



b. Massive amounts of data will be collected by this information system. Describe some of this data, explain how it will be analysed, and justify why these particular methods of analysis are appropriate to the situation. **[4]**

c. The information that results from this system will need to be stored and retrieved several times throughout the course of the committee's investigation. Outline two options for where and how this information should be stored and explain why they would be suitable. **[2]**

d. Briefly discuss the social and ethical issues related to this system. **[2]**

QUESTION 22 **[6 marks]**

Jian is a university student enrolled in a Bachelor of Media & Communications degree, which involves writing essays, composing mock articles for publishing, creating websites as assignments, and combining each of these with multimedia of varying kinds. Jian's assignments are submitted online through his university's website.

a. Describe three instances of processing that Jian might perform. **[3]**

b. Contrast the pieces of hardware that Jian would require if he were to submit his assignments in hard-copy instead of online. **[3]**

QUESTION 23 **[5 marks]**

The following three video cameras each record data onto a different storage device/medium.

Canon FS100
Stores to flash memory

Hitachi DZ-GX5100
Stores to DVD

Sony HDR-SR11
Stores to hard drive

a. Compare and contrast these three different methods of storing video files, outlining the main advantages of each method. **[3]**

b. Suppose you purchase the Hitachi DZ-GX5100. Describe two distinct methods that could be used for sharing the videos that you create with the camera. **[2]**

QUESTION 24 **[3 marks]**

a. Identify and describe the steps in the *fetch-execute cycle*. **[2]**

b. Briefly explain how boosting cache size increases the speed of this cycle. **[1]**

- END OF EXAM -

 Name:_____

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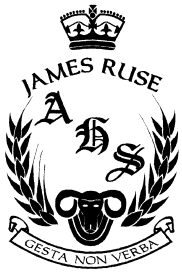

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2				X
3			X	
4			X	
5		X		
6		X		
7		X		
8	X			
9			X	
10		X		
11	X			
12	X			
13			X	
14		X		
15		X		
16		X		
17	X			
18				X
19				X
20	!			

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Extended Answer

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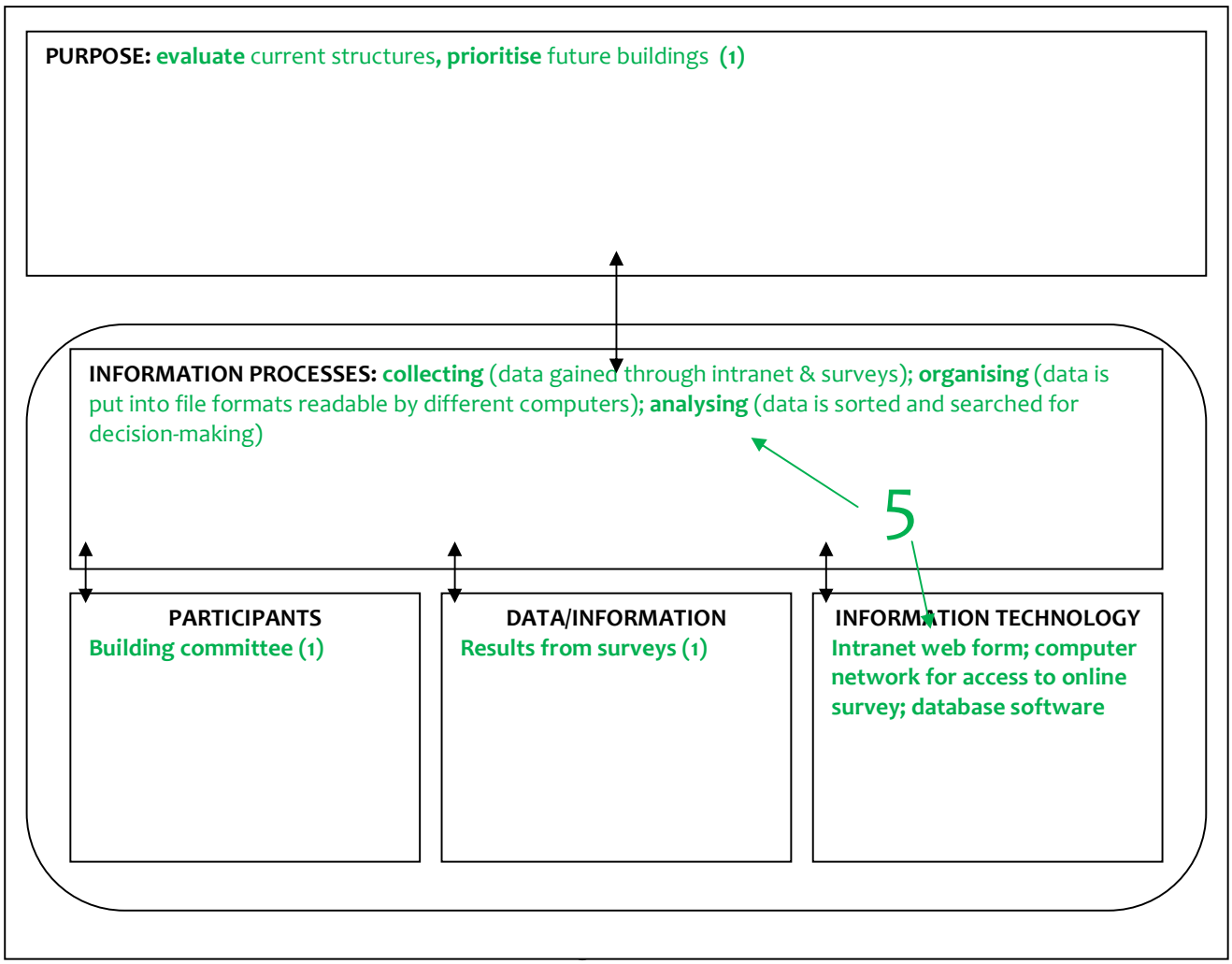

Massive amounts of data will be collected by this information system. Describe some of this data, explain how it will be analysed, and justify why these particular methods of analysis are appropriate to the situation. **[4]**

0.5 – describe data (e.g. text, Boolean, numerical)

1.5 – mention methods of analysis (e.g. sorting, labelling, searching)

2 – justification of methods

c. The information that results from this system will need to be stored and retrieved several times throughout the course of the committee's investigation. Outline two options for where and how this information should be stored and explain why they would be suitable. **[2]**

1 – first option + explanation

1 – second option + explanation

d. Briefly discuss the social and ethical issues related to this system. **[2]**

Incorrect analysis leads to poor decision-making

Privacy of contributors

Falsification of results by someone hacking into database and skewing survey data

QUESTION 22 **[6 marks]**

Jian is a university student enrolled in a Bachelor of Media & Communications degree, which involves writing essays, composing mock articles for publishing, creating websites as assignments, and combining each of these with multimedia of varying kinds. Jian's assignments are submitted online through his university's website.

a. Describe three instances of processing that Jian might perform. **[3]**

Correction of spelling/grammar errors

Altering photos to fit into his publishing style

Adjusting features/navigation of website and updating web pages

Editing essays/articles by changing language and sentences

Adding recent content to website

[3]

b. Contrast the pieces of hardware that Jian would require if he were to submit his assignments in hard-copy instead of online.

1 If Jian simply submitted his assignments in hard-copy, he would need far less technology – basically just a printer and paper.

1 Under the current system of online submissions, more sophisticated hardware is required: an internet connection and modem.

1 Contrast – the online hardware is more complicated, but allows greater flexibility. The online hardware is also more costly, but has the benefit of speed and convenience.

QUESTION 23 **[5 marks]**

The following three video cameras each record data onto a different storage device/medium.

Canon FS100
Stores to flash memory

Hitachi DZ-GX5100
Stores to DVD

Sony HDR-SR11
Stores to hard drive

a. Compare and contrast these three different methods of storing video files, outlining the main advantages of each method. **[3]**

1 Flash memory – compact and durable; fast write speed; non-permanent

1 DVD – cheap and easy for distribution

1 Hard drive – capacity and 'lifetime' of media; non-permanent

b. Suppose you purchase the Hitachi DZ-GX5100. Describe two distinct methods that could be used for sharing the videos that you create with the camera. **[2]**

1 Simply hand out the DVDs – make copies of them in DVD burners and send them out physically (e.g. by post)

1 Upload to computer and make available online through video-sharing services (e.g. YouTube, Facebook)

QUESTION 24 [3 marks]

a. Identify and describe the steps in the *fetch-execute cycle*. **[2]**

1 Fetch – retrieve program instructions from memory address given in registers

1 Execute – control unit obeys the instruction and processes the requested data

b. Briefly explain how boosting cache size increases the speed of this cycle. **[1]**

Reduces the time that the control unit must wait for its instructions to arrive – several instructions are 'pre-fetched' ahead of time so that the control unit can simply execute them without waiting for the next one to arrive

- END OF EXAM -