

IPT HSC EXAM

SECTION I (20 marks)

- In which stage of system development would you create a dataflow diagram of the system?**
 - Planning
 - Designing
 - Testing, Evaluation and Maintaining
 - Implementation
- Zac is the manager at Efron Industries, which sells hair care products. It has head offices in San Francisco, Los Angeles and Miami. They use a distributed database management system which each city's local database stores details of the local sales only, ie the San Francisco office database has only the data about the sales in San Francisco. What type of distributed database system is being used?**
 - Vertical Fragmentation
 - Replication
 - Horizontal Fragmentation
 - Downloading
- Which of the following describes a physical bus topology?**
 - All nodes are connected to a central node
 - Each wireless device is connected to a Wireless Access Point
 - All nodes are connected to a single optic cable
 - Data packets travel around the network in one direction only.
- George clicked on a link: Bush
In the source code, it appeared with its anchor tag as**

`Bush`

Which of the following is NOT true?

- When the link is clicked, an image file named bush.gif is displayed
 - /president/us/ is the subdirectory path leading to the file
 - A file is being retrieved and displayed
 - The file being retrieved is called bush.html
- Which of the following describes off-line storage?**

	Use of stored data	Access speed to data	Example
(A)	Always directly available	Fast access	Network server
(B)	Must be mounted into a drive	Slow access	Optical disc
(C)	Must be mounted into a drive	Slow access	Hard disk
(D)	Always directly available	Slow access	Magnetic tape

6. **Sammy Boy is using his computer one day. What is the name of the process of which his computer communicates with his modem to establish a connection?**
- Communication Linkage
 - Hardware Synchronisation
 - Terminal Connection
 - Hardware Handshaking
7. **Communication problems are common between people. Communication problems occur between computers as well. Which one of these is not a reason of why a transmission error could occur?**
- Interference from dust and weather conditions such as rain and extreme temperatures
 - User inputs misinterpreted data into information system
 - Radio interference from televisions and radios that are using similar signal frequencies
 - Old or damaged cables and equipment being used to carry the signal

8.

Actors			
ActorID	Surname	Firstname	City
1	Murphy	Eddie	Los Angeles
2	Cruise	Tom	San Francisco
3	Pitt	Brad	Miami
4	Depp	Johnny	Los Angeles
5	Bana	Eric	Miami
6	Doe	John	Los Angeles

Acting		
ActorID	Income	Talented
1	1 000 000	Y
2	5 00 000	N
3	5 00 000	N
4	2 000 000	Y
5	2 000 000	Y
6	1 500 000	Y

The following SQL statement is used to select data from the above tables in a relational database:

```

SELECT Actors.Surname, Actors.Firstname, Acting.Income
FROM Actors, Acting
WHERE Income > 1 000 000 AND Talented = Y
ORDER BY Surname

```

Which of the following sets of data will be retrieved?

a)

Bana	Eric	2 000 000
Depp	Johnny	2 000 000
Doe	John	1 500 000

b)

Bana	Eric	Miami
Depp	Johnny	Los Angeles
Doe	John	Los Angeles

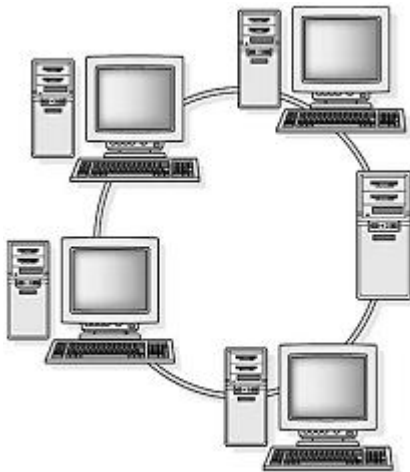
c)

Doe	John	Los Angeles
Depp	Johnny	Los Angeles
Bana	Eric	Miami

d)

Doe	John	1 500 000
Depp	Johnny	2 000 000
Bana	Eric	2 000 000

9. **Look at the diagram below :**



What does this diagram represent?

- a) Token Ring Topology
- b) Logical Star Topology
- c) Bus Network Topology
- d) Circular Connection Topology

10. A flat-file database consists of:

- a) more than one table
- b) more than one file
- c) one file
- d) null data

11. A relational database has the following feature:

- a) Primary keys are allowed NULL values.
- b) Every record in each table has a unique key field or field
- c) There are NO foreign keys.
- d) It has a single data type only.

12. Data integrity refers to:

- a) the reliability and accuracy of data
- b) data validation
- c) data privacy
- d) data range checks

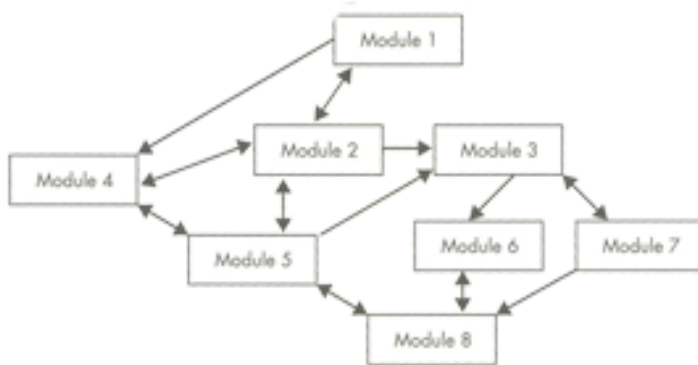
13. Summer Heights High School has a website where students and parents can access information about the school and coming events. The most appropriate form of storing this information would be:

- a) relational database
- b) flat-file database
- c) hierarchical database
- d) hypermedia

14. Which of the following statements describes the difference between baud rate and bits per second, when referring to electronic data transmission along a communication channel?

- a) Baud rate is the rate at which data bytes are transmitted, and bits per second are the rate at which bits are transmitted per second.
- b) Baud rates and bits per second mean the same thing, as both refer to data transmission rates.
- c) Baud rate is the range of frequencies that the communication channel is capable of transmitting, and bits per second is the full range of frequencies transmitted per second.
- d) Baud rate is the number of signal or different data symbols transmitted per second, and bits per second is the number of bits transmitted every second.

15. Which storyboard arrangement does the following diagram represent?



- a) nonlinear or network storyboard arrangement
- b) hierarchical storyboard arrangement
- c) combination or hybrid storyboard arrangement
- d) linear storyboard arrangement

16. A type of encryption method that requires a key for encryption and another key for decryption is called:

- a) asymmetric encryption
- b) symmetric encryption
- c) private key encryption
- d) public key encryption

17) Which of the following is an Application Level protocol in communication?

- a) TCP
- b) Ethernet
- c) FTP
- d) IP

18) Which of the following is NOT true about the internet?

- a) It is a worldwide network of computers, servers and LANs
- b) It was designed for synchronous transfers.
- c) All data moves between nodes within IP datagrams
- d) Can be accessed by the public via ISP

19) Gregory House Hospital implemented a computerised new database system 3 months ago. Originally, the system was a manual filing system, where information on patients was stored in physical folders. The records are gradually being digitised.

Doctors mostly use the computerised system, unless the records for the patient have not been digitised yet, in which they refer to the original system.

Which of the following system conversion methods best describes the one being implemented?

- a) Parallel
- b) Phased
- c) Direct
- d) Pilot

20) Which of the following describes why deskilling is an issue that may be reviewed as part of the ongoing evaluation phase after a system is implemented?

- a) Deskilling is an impact that the system has on the participants of the system and must be subject to evaluation to determine whether this affects whether the system is meeting its requirements.
- b) Deskilling impacts the participants of the system because the information system performs processes that were once performed by the participants.
- c) As a result of deskilling, workers had to either leave the industry or retrain to use the new automated system.
- d) Deskilling is a negative impact of the system on the participants, and system must be modified so that it only has a positive impact.

Section II (42 Marks)

Question 21 (9 marks)

A cosmetics firm called *On the GO* employs sales representatives to market their products all over the state of NSW. The sales representatives do not work in an office. Each sales representative carries a notebook computer and accesses the Internet using a mobile phone. All immediate sales and orders are lodged electronically via the Internet. Sales representatives carry sufficient stock with them, but for any large orders, they can search the company's database to find out whether sufficient supplies of stock are available at the warehouse to fulfil orders.

- a) What transmission medium does this communication system use? (2 marks)
- b) Describe in words and draw the information technology required to support communication between participants. (3 marks)
- c) Explain what effects the information technology could have on the sales representatives employed by *On the GO*. (4 marks)

Question 22 (13 marks)

Medical practitioners can implement other efficiencies in their work environment by establishing computer networks. Using these networks, doctors sharing the practice can access the medical histories of other doctors' patients if they are seeing and treating those patients. Some patients may simply want the first available doctor. With a networked computer system, doctors in the practice can make use of common Internet access points through Internet sharing devices and software. With links to other medical service providers such as medical diagnostic providers, doctors may have online access to patients' X-rays, ultrasound, and Magnetic Resonance Imaging records.

- a) Explain TWO advantages and TWO disadvantages of the computerised information system described above when compared to manual paper-based practices. (4 marks)
- b) Discuss the technology issues relating to the transmitting, receiving and display of the information in the system. (3 marks)
- c) Two groups of users of this information system are the office staff, such as the receptionists, and the doctors. Each would use the system for different purposes. Identify ONE use of the system by doctors when dealing with patients and ONE use of the receptionists when dealing with patients. How would the screen view for doctors and receptionists differ? Draw TWO screen displays illustrating your answer. (6 marks)

Question 23 (10 marks)

Lots-Of-Stuff is a retail store that sells a wide variety of products. They have a database that has records of every sale ever made. Whenever a transaction is made, the employee behind the counter in the store at the time needs to enter details of the sale into the Sale table, as seen below.

Consider the following flat-file database

Sales						
ItemID	ProductName	Price	EmployeeName	CustomerName	CustomerPhone	Date
1	Coffee	6.50	Gloria Jeans	Cath Feen	9553 4207	4/5/06
2	Television	150.00	Bing Lee	Heidi Finition	9594 7298	5/5/06
3	Hot Chocolate	5.50	Gloria Jeans	Heidi Finition	9594 7298	6/5/06
2	Television	150.00	Dick Smith	Cath Feen	9553 4207	8/5/06
2	Television	150.00	Dick Smith	Satie Lite	9707 1274	9/5/06
4	Light bulb	7.50	Harvey Norman	Phil Ament	9123 4567	9/5/06

- a) Identify an example of data redundancy in the above table and why it is redundant. (2 marks).

- b) Discuss problems that might arise as a result from data redundancy in this database in relation to processes of collecting, processing, analysing and storing/retrieving. (4 marks)

- c) Normalise this flat-file database into a relational database with four tables: Employees, Customers, Sales and Items. Indicate all necessary relationships, primary keys and foreign keys. (4 marks)

Question 24 (10 marks)

- a) Nick Jonas and Joe Jonas are famous musicians who often travel around the world separately and find it difficult to communicate in person. Nick Jonas wishes to talk to and see his brother Joe Jonas by videoconference, transmitting audio over the PSTN and video using IP over the internet.
- i) Identify the information technology needed for this videoconference. (3 marks)
 - ii) Identify and describe TWO advantages and TWO disadvantages in relation to this videoconferencing system. (4 marks)
- b) It's difficult for Nick and Joe Jonas to be available at the same time for a videoconference. Email becomes a more accessible form of communication. Sending email is a client-server operation.

Describe the role of the client and the server in email, as well as how they interact with each other. (3 marks)

Section III (30 marks)

Question 25 (10 marks)

Transaction Processing Systems

- a) Explain the difference between batch file and real-time transaction processing. Include some examples of batch file and real-time transaction processing in your answer.
(4 marks)

- b) Critically analyse the data accuracy, data security and data integrity issues that may arise with transaction processing.
(6 marks)

Question 26 (20 marks)

Multimedia Systems

- a) Define run-length encoding. (2 marks)

- b) Vianna is making a slideshow presentation for her PDHPE assignment. She has taken photographs which she is planning to insert into the presentation.
 - i) Describe relevant considerations that must she take into account as she is preparing the images for inclusion in this presentation? (3 marks)

 - ii) Vianna wishes to edit the photographs before putting them into the presentation. Describe the major features of software applications available for graphics that Vianna may use to edit the photographs. Name an example of a graphic software. (3 marks)

- c) Describe the hardware used and the processing occurring as an image is being collected via a flatbed scanner, retrieved by a graphic editing application and displayed on LCD screen. (5 marks)

- d) Mozart is listening to a streamed audio file of Beethoven's 9th Symphony Opera.
 - i) Describe TWO advances in technology that have improved this experience, and how they have improved it. (2 marks)

 - ii) The audio file is 2 minutes long, has a sample rate of 44100, with each sample having a bit depth of 16 and is stereo. Demonstrate how to find the size of the file in megabytes, explaining what each number in the calculation represents. Do not calculate the end total. (2 marks)

 - iii) Considering that this audio file consists of instruments as well as vocals, contrast the use of audio file formats MP3 and MIDI for representing Beethoven's 9th Symphony. Justify which is the more suitable file format. (3 marks)