

## Section I

**20 marks Attempt Questions 1–20 Allow about 40 minutes for this section**

Use the multiple-choice answer sheet for Questions 1–20.

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### **1 How is data collision dealt with in CSMA/CD?**

- (A) Transactions are aborted
- (B) All transactions are stopped and the sending nodes wait a random amount of time before attempting to resend
- (C) Only one data packet is sent at a time, so there is never a collision
- (D) It is ignored

### **2 What is the function of TCP?**

- (A) To ensure messages are delivered correctly over the internet
- (B) Causes data packets to move from sender to receiver
- (C) To allow web browsers to communicate and retrieve web pages from web servers
- (D) To establish a connection between nodes

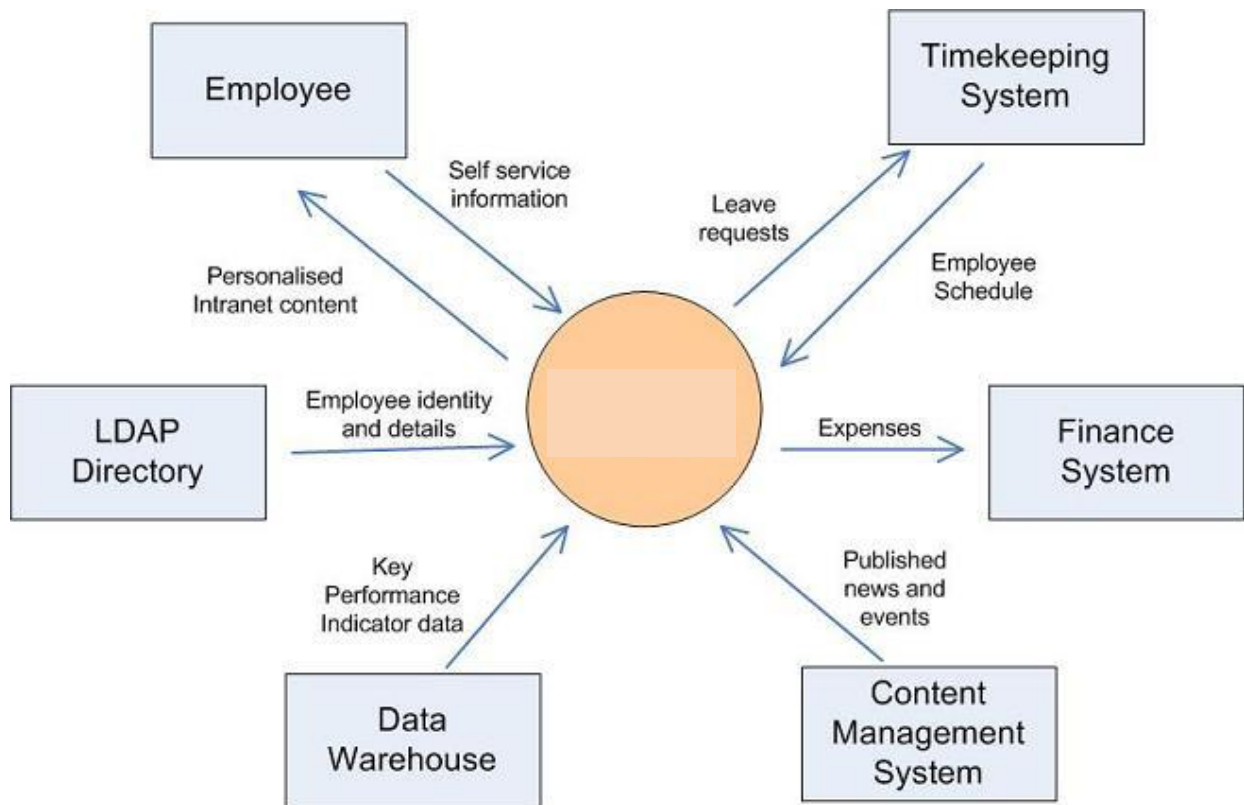
### **3 Miley Cyrus works for Disney Channel on the popular TV series Hannah Montana. On set, she notices that reading her script is difficult due to dim lighting. What issues are present?**

- (A) Respect for the rights and needs of individual team members
- (B) Security of data and information
- (C) Occupational Health and Safety
- (D) Copyright

### **4 Adam Sandler has just launched her new production company Happy Madison. To promote this new business he has decided to launch a website, to promote recent films made by the company. Because he is only skilled at being funny, he hires a professional to analyse the website, determine requirements and design the new system. Which person should he hire?**

- (A) Project Manager
- (B) Requirements operator
- (C) System Analyst
- (D) Web Designer

**5 What system does this context diagram represent?**



- (A) A company Intranet
- (B) A transaction processing database
- (C) A finance system
- (D) An eBay transaction

**6 Why would Steve Jobs use a record lock in the Apple database?**

- (A) To ensure that an unauthorised user will not be able to access certain confidential records
- (B) So data cannot be accessed when another user is using it and therefore preventing data loss
- (C) To create a password to protect the database
- (D) So people who access the data know they are being tracked

**7 Which of the following best describes the actions of search engine robots?**

- (A) Retrieve ranked lists of links based on user inputs
- (B) Creating an index of all words on a retrieved web page
- (C) Analysing web pages to create and store page summaries
- (D) Extracting and storing links from retrieved web pages

**8 In terms of broadband capacity, which of the following is ordered from most to least capacity?**

- (A) Optic fibre, satellite, microwave, twisted pair
- (B) Satellite, twisted pair, optic fibre, microwave
- (C) Microwave, Optic fibre, satellite, twisted pair
- (D) Optic fibre, microwave, satellite, twisted pair

**9 The following byte is to be sent with a parity bit of 1 added: 1011100. The parity was received as 1011101 with a parity bit of 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 even parity and would be interpreted by the receiver as correct
- (C) The data were sent as odd parity and would be interpreted by the receiver as incorrect
- (D) The data were sent as even parity and would be interpreted by the receiver as incorrect

**10 Which of the following is not a function of a database management system?**

- (A) The retrieval of records which satisfy certain criteria through query language
- (B) Creating a schema for the database with primary keys
- (C) The facility for entry of data into fields
- (D) Mirroring the database onto different hard drives

**11 Which of the following is NOT true of html files?**

- (A) Some html documents are stored as images files.
- (B) Pairs of tags are used to specify hyperlinks and other instructions.
- (C) Tags are strings of text with no meaning until they are analysed and acted upon.
- (D) Text contained within a pair of angled brackets is understood by web-enabled applications to be an instruction; all other text is displayed.

**12 Chace Crawford is upset with his roommate Ed Westwick. He has decided to move out of their shared apartment and is currently looking for a new home. This dream home must be located in New York and must cost below \$20 million. What SQL code should Chace type to display only relevant properties?**

- (A) SELECT Property Id FROM Properties WHERE City = "New York" AND Price<\$200,000,000
- (B) SELECT Property Id FROM Properties WHERE City = "New York" AND Price<\$20,000,000
- (C) SELECT Property Id FROM Properties WHERE City = "New York" AND Price>\$20,000,000
- (D) SELECT Property Id FROM Properties WHERE City = "New York" OR Price<\$20,000,000

**13 Why would someone choose to use coaxial cables?**

- (A) It is highly protected from interference and still very flexible
- (B) It is inexpensive and has a high bandwidth
- (C) It takes up little space and is inexpensive
- (D) It is highly protected from interference and has a relatively high capacity

**14 Which of the following is NOT a screen and report design principles?**

- (A) Effective prompts
- (B) Data verification
- (C) Data validation
- (D) Legibility of text

**15 What should a funding management plan specify?**

- (A) Mechanisms to ensure money is spent throughout the SDLC
- (B) The procedures to be followed when a product or service is ordered during the systems development
- (C) Methods for monitoring the progress of the system's development
- (D) Changing or emerging requirements

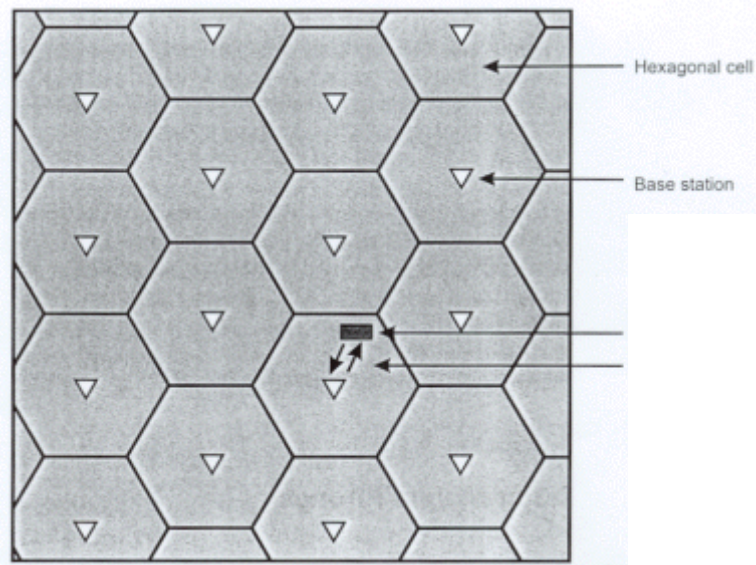
**16 What is OLAP?**

- (A) A technique for providing business decision makers with statistical evidence
- (B) The process of discovering non-obvious patterns within large collections of data
- (C) A database that allows transactions to be processed immediately by remote users
- (D) A large separate combined copy of different databases used by an organisation

**17 Which is the following is NOT a function of a gateway?**

- (A) Connect networks that use different lower level protocols
- (B) To filter traffic movements between two similar networks
- (C) To connect LAN to the Internet
- (D) To separate a network into different segments at the data link layer

**Questions 18 and 19 refer to the following diagram.**



**18 What does type of network does the diagram represent?**

- (A) A satellite network
- (B) A Bluetooth network
- (C) A mobile phone network
- (D) An optic fibre network

**19 What does the rectangular block and two arrows represent?**

	<b>Rectangular block</b>	<b>Arrows</b>
(A)	Communication tower	Microwave s
(B)	Mobile phone	Radio signals
(C)	Satellite	Infrared waves
(D)	Microwave transponders	Microwaves

**20 Referential integrity is ensured when each FK always matches a related PK. What is the only exception?**

- (A) When a FK is deleted
- (B) When a PK is altered
- (C) When a PK is deleted
- (D) When NULL values are permitted in the FK

## Section II

**40 marks Attempt Questions 21–24 Allow about 1 hour and 10 minutes for this section**

Answer each question in the appropriate writing booklet. Extra writing booklets are available. If you include diagrams in your answer, ensure that they are clearly labelled.

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**Question 21** (10 marks)

**Marks**

Heidi Montag's party planning business is impractically located in a remote area on the coast of Adelaide. Heidi wishes to update its current information technology to improve both internal and external communication. Due to the location, tropical storms are frequent and often disrupt the power feed. Tourism is also a major component in the area, due to Heidi's new fame.

Currently, the business has an office complex where 10 employees share 5 stand alone computers. The computers are only a few months old and each is connected to its own printer. The computer in Heidi's residence has an Internet connection via a standard phone line. There are three other telephone lines entering the property, currently two are used for voice, and the other for fax.

- (a) Recommend suitable transmission media for each internal network link. Justify each of your recommendations **6**
- (b) Draw a suitable network topology layout for the system. Include an explanation as to why this topology is suitable. **4**

**Question 22** (10 marks)

**Marks**

Feeling the pressures of the Hollywood lifestyle, Jessica Simpson has decided to live a low key lifestyle and start her own DVD rental store. The store holds records of the details of its customers and the videos and DVDs they have borrowed using a software application connected to the database. Jessica has a single personal computer attached to a cash drawer, barcode scanner and printer. She uses the computer to generate various financial and statistical reports from the database. The computer is used when enrolling new members, processing sales and entering returned movies.

Each customer has a membership card that includes a barcode representing their membership number. Similarly, each video and DVD has a unique barcode. An EFTPOS machine is used to process all credit/debit payments.

- |  |          |
|--|----------|
| (a) Describe how the collecting and processing of data occurs in this information system           | <b>2</b> |
| (b) Draw a dataflow diagram to represent the information system when a new customer borrows a DVD. | <b>4</b> |
| (c) For Jessica's DVD rental store, identify the:  | <b>4</b> |
| • purpose of the system  |          |
| • participants   |          |
| • data/information, and  |          |
| • information technology   |          |

**Question 23** (10 marks)

**Marks**

Bill Gates has recently constructed a new Microsoft store in Sydney, Australia. The company already has offices located in New York, London, Tokyo, Beijing and New Delhi. Next week, Bill must jet off to Australia in time to open the new store. However, Bill is currently in the middle of a major Microsoft development which requires constant communication with other members on the board.

- (a) Compare and contrast the use of teleconferencing with traditional telephone and face to face meetings in this situation. Recommend the most suitable method. **3**
- (b) Identify and briefly describe the information technology required if a teleconferencing system is implemented **3**
- (c) Describe how data is transmitted and received between offices during teleconferencing **4**

**Question 24** (10 marks)

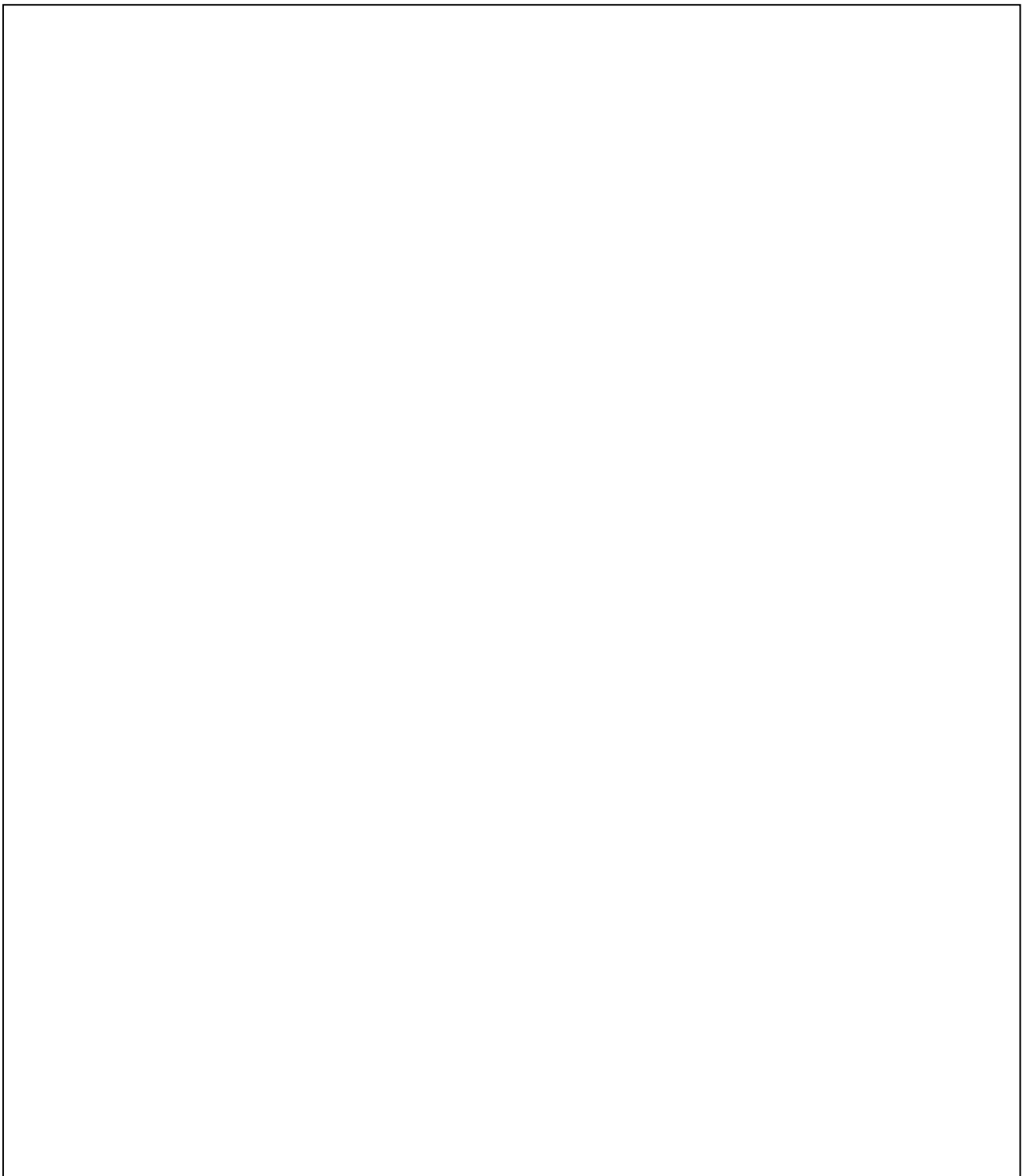
**Marks**

Desperate to gain more publicity, a 'strapped for cash' Lindsay Lohan wants to create a fan website that her fans can access and receive regular updates about her life and work. She also wants a link to her twitter page and a comment box for fans to send messages to her. In addition she wants fans to be able to access images, videos, audio clips of her songs, and hyperlinks to other popular fansites on her page.

She wants this system to be created quickly in the next month, before the gossip tabloids stop talking about her.

(a) Design a Gantt chart for this project in the space below.

**4**



(b) Suggest and justify an appropriate method to introduce the system. **2**

(c) Design an appropriate storyboard for this website. **4**

### Section III

**40 marks Attempt all questions from Questions 25–26 Allow about 1 hour and 10 minutes for this section**

Answer each question in a SEPARATE writing booklet. Extra writing booklets are available. If you include diagrams in your answer, ensure that they are clearly labelled.

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#### **Question 25 — Transaction Processing Systems (20 marks) Marks**

(a) (i) Define *batch transaction processing* and give an example of where it is used 2

(ii) Briefly explain the *Grandfather, father, son* method of backup and recovery 2

Gold Real Estate, a large company with offices throughout Australia, maintains a central employee database at its Sydney Head office. The company uses a traditional batch payroll system to produce weekly payslips for each of its employees.

When the weekly payroll is run, a single payslip is produced for each employee showing their hours worked for this week together with their pay, taxation and superannuation details. An overall summary of the weekly payroll is also produced for use by management in their budgetary processes.

(b) (i) Analyse the strengths and weaknesses of the current batch system and assess the effects of altering this system to a real time system. 4

(ii) Propose suitable validation methods that could be performed on the data when it is entered onto the screen. Justify your responses 4

Fun Fruit Salads (FFS) sells fruit salads to the general public. FFS is well known for their different yummy flavours as well as various other merchandise. FFS has a transaction processing system (TPS) to process their sales, generate purchase orders, supplier payments and produce stock level reports.

(c) (i) Propose and describe a suitable backup procedure (other than grandfather, father, son) which may be employed by Fun Fruit Salads. 4

(ii) Identify and describe some information technology required for collection of data in this system. 4

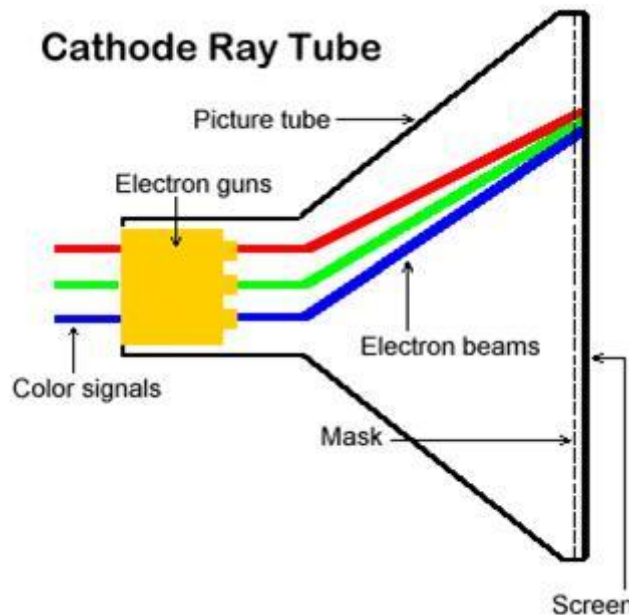
**Question 28 — Multimedia Systems (20 marks)**

**Marks**

(a) (i) Describe and explain TWO differences between a sound in MIDI and MP3. 2

(ii) Identify and explain which animation technique(s) would be appropriate for a team producing a short advertisement where animated fruit and vegetable characters sing as they walk across the screen. 2

Megan Fox, while throwing a diva tantrum, demands a new TV in her trailer while filming Transformers 3. Michael Bay, the director, assigns Tim to find an appropriate TV for Fox. Fox requires a clear, crisp image, aesthetic appeal, and doesn't really care about the environment. Tim researches three types of TV screens; the CRT, LCD, and plasma screen.



(b) (i) Describe how a CRT screen operates, including the main components, colour, and refresh rates. You may refer to the diagram. 4

(ii) Discuss the advantages and disadvantages of the LCD screen. 4

The members of Glee club are working on a multimedia project promoting their club to the wider school community. This will be displayed in a booth in front the auditorium, where students frequently walk by. Rachel wants to make the project a linear website using presentation software incorporating video clips of their performance. However, Quinn would prefer a simple folder of images and videos (of dancing members of the group), which users would be free to browse.

(c) Compare the two approaches in terms of technical and ethical issues that need to be considered for the inclusion of images and videos. Justify which method would be suitable, taking into account the impact on final users of the project. 8

**End of Paper**