



SUBJECT: **Information Technology**  
DATE: 25<sup>th</sup> May 2022  
TIME: 4:00 p.m. to 7:05 p.m.

### Directions to Candidates

Workings are considered as part of the answer and must be shown.

### SECTION A: COMPUTING PRINCIPLES

**Answer Question 1 and any other FOUR questions from this section.**

**This question is compulsory.**

1. A scooter rental company is keeping track of all information by means of a database management system (DBMS). It keeps note of all its clients' details such as ID number, name, surname and contact number. It also keeps track of all scooters' details including the scooter ID, type of scooter and status that indicates whether the scooter is available or not, as well as the locations where the scooters are parked/stationed. The 'Locations' entity includes the location ID, longitude and latitude.

a. Define DBMS. (1)

b. Draw an Entity-Relationship (E-R) diagram for the above-mentioned scenario. The first entity (the 'Client' entity) together with its attributes is provided in Figure 1. (3)

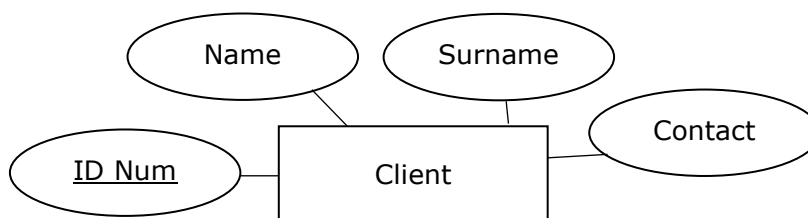


Figure 1

c. Identify a primary key for **each** of the entities specified in part (b) (excluding entity 'Client'). (1)

d. Briefly explain the use of a foreign key. (1)

e. Mention **ONE** type of relationship between the 'Client' entity and any other entity. (1)

f. Identify appropriate field types for 'ID Num' and 'Surname' attributes in the Client entity. (2)

**Question continues on next page.**

This company has also developed a new website to promote scooter rentals by means of HTML and CSS.

- g. Define HTML. (1)
- h. Define CSS. (1)
- i. Describe **THREE** pages which might be present in the website. (3)
- j. Define the term sitemap. (1)
- k. Mention **THREE** other Internet utilities, apart from the WWW which might be used by the scooter rental company. (3)

**(Total: 18 marks)**

**Answer any FOUR questions from questions 2, 3, 4, 5, 6 and 7.**

- 2. A recently opened business analytics company has bought some laptops for its employees. Although the hardware devices are available, software products still need to be purchased.
  - a. Mention **TWO** software categories which the company might require. (1)
  - b. Define **each** of the software categories mentioned in part (a). (2)
  - c. Identify **THREE** types of software for **each** category mentioned in part (a) which might be beneficial to the company. (3)
  - d. Select **ONE** type of software mentioned in part (c) and identify **TWO** possible scenarios where this software might be useful for the company. (2)

**(Total: 8 marks)**

- 3. A start-up company is currently backing up most of its data on flash memory. However, the managers of the company would like to explore the possibility of using other secondary storage devices to improve their efficiency.
  - a. Explain **TWO** differences between primary and secondary storage devices. (2)
  - b. Define flash memory. (1)
  - c. Mention **TWO** types of optical-based storage devices that can be used by the company. (1)
  - d. For **each** device specified in part (c), mention **ONE** advantage and **ONE** disadvantage. (4)

**(Total: 8 marks)**

4. An insurance company uses a Local Area Network (LAN) to allow communication between employees within the same company.
- a. Apart from LAN, give an explanation of **TWO** other types of networks. (2)
  - b. Mention **TWO** advantages and **TWO** disadvantages of LAN networks which should be considered by this insurance company. (4)
  - c. Identify and draw **TWO** LAN topologies which can be utilised by the insurance company for communication purposes. (2)

**(Total: 8 marks)**

5. Due to the current COVID-19 situation, last year many schools used an e-learning environment to deliver lessons to their students.
- a. Define e-learning. (1)
  - b. Define Learning Management Systems. Provide **ONE** example of such systems which might have been utilised by schools during the COVID-19 pandemic. (2)
  - c. Mention **TWO** advantages of e-learning when compared to traditional learning. (2)
  - d. Mention **TWO** health-related problems which students and teacher might have experienced last year due to frequent use of computer systems. (2)
  - e. What does the term ergonomic environment refer to? (1)

**(Total: 8 marks)**

6. A hotel decided to order a custom-made database to be used by its front-desk employees. This will allow the employees to easily input and access data for clients' bookings and records. The hotel is uncertain whether to use Command Line Interface (CLI) or a Graphical User Interface (GUI) to interact with the database.
- a. List **TWO** advantages and **TWO** disadvantages of Command Line Interface (CLI) that the hotel should consider. (4)
  - b. List **TWO** advantages and **TWO** disadvantages of Graphic User Interface (GUI) that the hotel should consider. (4)

**(Total: 8 marks)**

7. A hotel management makes use of an intranet and extranet. The hotel offers Internet in rooms including social media services and TV streaming. IT administrators frequently monitor the network against Internet-based fraud through a firewall.
- a. Differentiate between Intranet and Extranet. (1)
  - b. Give **ONE** scenario for the use of an Intranet in the hotel. (1)
  - c. Give **ONE** scenario for the use of an Extranet in the hotel. (1)
  - d. Describe **TWO** different types of Internet-based fraud which the hotel might experience. For **each** fraud, mention **ONE** method to avoid it. (4)
  - e. Define firewall. (1)

**(Total: 8 marks)**

***Please turn the page.***

**SECTION B: HUMAN COMMUNICATION AND BUSINESS ORGANISATION**

**Answer Question 1 and ONE other question from this section.**

**This question is compulsory.**

1. A digital marketing firm is debating how to reach out to customers using communication technologies and their key features. The director enlisted the help of the IT manager to find the best communication technologies and analyse their benefits and drawbacks. This research will aid the director in selecting the best communication technology for the digital marketing firm.
  - a. List **TWO** different communication technologies that can be used to reach audience online. (1)
  - b. Discuss how images used in online communication can be optimised for bandwidth considerations in terms of:
    - i. image format; (1)
    - ii. image resizing. (1)
  - c. Explain **TWO** main features for **each** communication technology tool listed in part (a). (4)
  - d. Identify **THREE** tools that can be used to create online video presentations. (3)

**(Total: 10 marks)**

**Answer ONE question from 2 and 3.**

2. A company is discussing which visual technologies to use to improve communication with existing and prospective clients. The company is also examining advantages and disadvantages of traditional publishing and digital publishing.
  - a. Give an outline and a scenario where the company's visual communication can improve with the use of:
    - i. photographs; (2)
    - ii. online presentations. (2)
  - b. Mention **THREE** advantages and **THREE** disadvantages of digital publishing. (3)
  - c. Mention **THREE** advantages and **THREE** disadvantages of printed publishing. (3)

**(Total: 10 marks)**

3. A company is training its new employees about organisational structures. The topic of one of the training sessions is system organisation and the differences between the private and public sectors.
  - a. Define an open system in an organisation. (1)
  - b. Define a closed system in an organisation. (1)
  - c. Provide an outline of a centralised organisation. (2)
  - d. Provide an outline of a decentralised organisation. (2)
  - e. Differentiate between a private sector and a public sector. (4)

**(Total: 10 marks)**