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SUBJECT: **Information Technology**  
DATE: 25<sup>th</sup> September 2020  
TIME: 9:00 a.m. to 12:05 p.m.

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**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.**

**1. This question is compulsory.**

- a. JeffMart is a local supermarket which has just set up a new IT system. A back-end database has been created to record employees' data, the department where they work, items in stock, and daily sales to customers. Part of this database is illustrated in Figure 1 below.

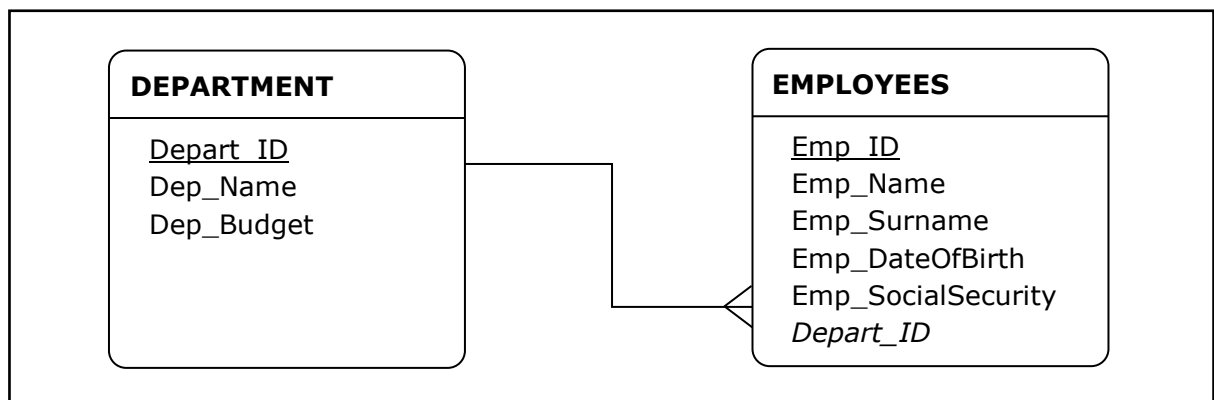


Figure 1

- i. Identify the primary key and the foreign key used in the Employees table shown in Figure 1. (1)
- ii. Explain **ONE** advantage of using a Database Management System (DBMS) in businesses like JeffMart. (2)
- iii. Determine the type of relationship that exists between the Department and the Employees table. (1)
- iv. Why is data consistency important? Explain how this can be achieved when designing a database and provide an example. (1, 3)
- v. Explain why it is important to implement a database test plan. (1)

***This question continues on next page.***

- b. A website is being designed for JeffMart supermarket. Through this portal, the supermarket directors would like to increase sales figures and attract new customers.
- i. Mention and explain **TWO** ways through which the website could be used to increase sales. (4)
  - ii. State **TWO** elements that should be considered to ensure the legibility of text in the website. (1)
  - iii. Explain **ONE** reason why bandwidth should be taken into consideration when planning the website graphics. (1)
  - iv. Describe the difference between internal and external hyperlinks, providing an example of each in relation to the above scenario. (3)
- (Total: 18 marks)**

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

2. a. The IT manager of a local government agency strongly suggested that, for security purposes, its computer systems should **not** be connected to a wireless network. Explain why a wireless network, as opposed to a wired network, should **not** be used. (4)
- b. Briefly outline **ONE** example of a Business-to-Business electronic transaction and **ONE** example of an Admin-to-Citizen e-government service. (2)
- c. Explain how an ergonomic office environment can help computer users avoid eyestrain. Give **TWO** examples of how this can be achieved. (2)
- (Total: 8 marks)**

3. a. Which **ONE** of the following storage devices is the fastest – a magnetic Hard Disk Drive (HDD) or a Solid State Drive (SSD)? Briefly explain why. (2)
- b. Outline **ONE** advantage and **ONE** disadvantage of speech recognition. (2)
- c. Computer users of a large manufacturing factory are experiencing network problems whereby at times data transmission is very slow. All computers are connected using twisted pair cables.
- Identify **ONE** scenario which could be affecting the data transmission rate in the above scenario and explain why it has such an impact on this network. (3)
- d. Which **ONE** of the following is a validation method used to check that data is inputted in the expected layout? Write the correct answer on your script.
- i. Parity check
  - ii. Presence check
  - iii. Format check
- (1)
- (Total: 8 marks)**

4. a. Explain the difference between System software and Application software. Provide an example of each. (3)
- b. List **FOUR** components of an Operating System. (2)
- c. i. Define Bespoke/Custom Application software. (1)
- ii. Outline **ONE** advantage and **ONE** disadvantage of using Bespoke/Custom Application software. (2)
- (Total: 8 marks)**

5. Relational databases are, as of today, the most popular form for companies to store their data.

- a. Explain **TWO** advantages that relational databases have over tradition file-based systems. (4)
- b. Provide a definition of the Data Dictionary within a DBMS. (2)
- c. Explain the issue of data size within a relational database (2)

**(Total: 8 marks)**

6. a. Define what the acronyms SMTP and CSS stand for. (2)

b. Outline the difference between a web server and a web browser. (2)

c. Explain **ONE** advantage and **ONE** disadvantage of video conferencing. (2)

d. Describe what phishing is and provide a real-life example. (2)

**(Total: 8 marks)**

7. Following a feasibility period and a market review, it was decided that a software development company should embark upon developing a new webserver. The software development company has approached the development by first defining the problem and subsequently subdividing the problem into smaller problem areas.

a. What is the name of the approach adopted? (1)

b. Explain **TWO** difficulties to be expected when following this approach to software development. (2)

c. Define integration testing. At which stage of the development can integration testing take place? (2)

d. What type of testing can be carried out, without the source code being made available to any testers? (1)

e. During testing, the system being developed has been found to be very stable. Moreover, the client has expressed their desire that the new software should be deployed without delay and with the least amount of inconvenience for the employees. Explain which changeover technique you would choose in this scenario. (2)

**(Total: 8 marks)**

***Please turn the page.***

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

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

**1. This question is compulsory.**

Valve Corporation are a video game developer and digital software publisher. Valve Corporation have operated since its inception as an informal organisation.

- a. Explain **TWO** difficulties that may be encountered at Valve due to their informal organisation. (4)
- b. In order to overcome recent challenges, Valve have decided to hire a CIO. Mention and explain **THREE** skills that Valve should **not** overlook when hiring the new CIO. (3)
- c. In order to drive online sales, five years ago Valve stopped providing any printed user manuals with their physical purchases. In order to help Valve Corporation re-assess this decision, provide **THREE** advantages provided by traditional documentation as opposed to other methods of user support. (3)

**(Total: 10 marks)**

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

2. Five years ago, the organisation Neurally was setup up in order to provide local companies with the services of business intelligence. At the time, the two co-founders opted to operate as a partnership.
  - a. The co-founders have been looking at other possible organisation types in order to reduce their liabilities whilst at the same time open up the possibility of external investments. Explain in detail the options they have at their disposal in this regard. (5)
  - b. The company has grown exponentially over the past five years and the founders are looking at formally introducing two fundamental functional areas to their organisation. Which **TWO** functional areas would you recommend that the founders introduce? Provide valid reasons for your answers. (5)

**(Total: 10 marks)**

3. A list compiled by a popular business magazine, showing the 100 largest companies since 1900, has revealed that only one company is still operating in the same business sector. The other companies, which were market leaders at the time have disappeared or changed business sectors altogether. This shows that, historically, most companies are not preparing for change. Write a detailed report, listing the steps or measures you would suggest that companies adopt in order to manage change.

**(Total: 10 marks)**