QUESTION 10.

12

10 (a) Explain the term computer virus.

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....[2]

(b) A virus checker has been installed on a PC.

Give **two** examples of when a virus checker should perform a check.

1 ....

....

2 ....

10 (a) Explain the term computer virus.

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....[2]

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1 ....

....

2 ....

5 (a) A Database Management System (DBMS) provides the following features.

Draw a line to match each feature with its description.

| **Feature** | **Description** |

| Data dictionary | A file or table containing all the details of the database design |

| Data security | Data design features to ensure the validity of data in the database |

| | A model of what the database will look like, although it may not be stored in this way |

| Data integrity | Methods of protecting the data including the uses of passwords and different access rights for different users of the database |

[3]

A school stores a large amount of data that includes student attendance, qualification and contact details. The school is setting up a relational database to store these data.

(b) The school needs to safeguard against any data loss.

Describe **three** factors to consider when planning a backup procedure for the data.

Justify your decisions.

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....[6]

(c) The database design has three tables to store the qualifications and grades ... attained. The following is a sample of the data from each table.

STUDENT

StudentID	FirstName	LastName	Tutor
001AT	Ahmad	Tan	11A
003JL	Jane	Li	11B
011HJ	Heather	Jones	10A

QUALIFICATION

QualCode	Level	Subject
CS1	IGCSE	Computer Science
MT9	IGCSE	Maths
SC12	IGCSE	Science

STUDENT-QUALIFICATION

QualCode	StudentID	Grade	DateOfAward
SC12	011HJ	A	31/8/2014
SC12	003JL	C	31/8/2014
CS1	003JL	B	31/8/2014

(i) Draw an Entity-Relationship (E-R) diagram to show the relationships between these three tables.

[2]

(ii) State the type of relationship that exists between STUDENT and STUDENT-QUALIFICATION.

....[1]

(iii) Describe how the relationship between QUALIFICATION and STUDENT-QUALIFICATION is implemented.

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....[2]

(d) (i) The database will store each student's date of birth.

Write an SQL script to add a date of birth attribute to the appropriate table.

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....[2]

(ii) Write an SQL script to display the StudentID, Grade and DateOfAward for the QualCode value of SC12.

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....[3]

(iii) Write an SQL script to display the FirstName and LastName and QualCode for all STUDENT-QUALIFICATIONs for which the Grade value is A.

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....[4]

4 A software developer works in a team for a large software development company.

(a) Two principles of the ACM/IEEE Software Engineering Code of Ethics are:

- developers must act consistently with the public interest
- developers must act in the best interest of their client and employer.

Name **and** describe **three** other principles in the ACM/IEEE Software Engineering Code of Ethics.

Principle 1 ....

Description ....

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Principle 2 ....

Description ....

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Principle 3 ....

Description ....

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[6]

(b) The software development company uses data backup and disk-mirroring to keep their data secure.

Explain how data backup and disk-mirroring allow the company to recover from data loss.

Data backup ....

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Disk-mirroring ....

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[4]

QUESTION 14.

1   A computer has an operating system (OS) and utility software.

(a) The following table lists key management tasks performed by an operating system and their descriptions.

Complete the table by writing the missing management task names and descriptions.

Management task	Description
Memory management	
	Provides user accounts and passwords
	Handles the signals sent when the attention of the processor is required elsewhere
Provision of a software platform	

[4]

(b) A hard disk formatter and a hard disk defragmenter are two examples of utility software.

(i) Describe the actions performed by a hard disk formatter and a hard disk defragmenter.

Hard disk formatter ....

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Hard disk defragmenter ....

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[4]

(ii) Identify **three other** examples of utility software that can be installed on

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3 ....

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[3]

QUESTION 15.

2 Aaron uses a desktop computer to do school work.

(a) Aaron has a mouse and keyboard that he can use as input devices and a mo. output device.

    (i) Identify **two** additional input devices Aaron could use with his desktop computer.

    1 ....

    2 ....

                       [2]

    (ii) Identify **two** additional output devices Aaron could use with his desktop computer.

    1 ....

    2 ....

                       [2]

    (iii) Aaron needs to store a large number of applications and data on his computer. He needs at least 50GB of secondary storage space.

    Identify **one** internal secondary storage device for Aaron's computer.

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    .... [1]

    (iv) Describe the internal operation of a trackerball mouse.

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    .... [3]

(b) Aaron's computer has an operating system (OS). The OS manages the ru... and provides a user interface.

Describe these OS management tasks.

Process management ....

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Provision of a user interface ....

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[6]

(c) Aaron's computer has a virus checker and backup software.

Describe these utility programs.

Virus checker ....

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Backup software ....

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[4]

(d) Aaron creates a web page using JavaScript code and HTML tags.

Describe how the JavaScript code is translated using an interpreter.

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.... [2]