

## Question 9

(9 marks)

A company keeps all employee timesheets in a single table database. Use your knowledge of databases to answer the questions below:

Employee First	Employee Surname	DOB	Week	Hours	Over time	Hourly rate	Gross Pay	Tax	Net Pay
Tran	Nguyen	30/12/2000	2	32	0	26.00	832	175	657
Max	Ossolov	18/05/1975	2	37.5	0	32.00	1200	252	948
Harold	Mansfield	11/07/1987	2	26	0	31.50	819	172	647
Jennifer	Abdul	25/05/2002	3	25	0	26.00	650	137	513
Tran	Nguyen	30/12/2000	3	37.5	2	26.00	1053	221	832
Harold	Mansfield	11/07/1987	3	34	0	31.50	1071	225	846
Jennifer	Abdul	25/05/2002	4	27	0	26.00	702	147	555
Maxine	Ossolov	18/05/1973	4	21	0	32.00	672	141	531
Harold	Mansfield	11/07/1987	4	37.5	3	31.50	1323	278	1045
Nicole	Brooks	23/05/2000	5	37.5	2	26	1053	221	832
Jen	Abdul	25/05/2002	5	15	0	26.00	390	82	308
Harold	Mansfield	11/07/1984	5	15	0	31.50	473	99	374
Tran	Nguyen	30/12/2000	6	14	0	26.00	364	76	288
Maxine	Ossolov	18/05/1975	6	31	0	32.00	992	208	784

- (a) Describe, with an example from the single table database above, the concept of an update anomaly. (3 marks)

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- (b) Describe, with an example from the single table database above, the concept of delete anomaly. (3 marks)

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- (c) Using an example from the single table database on page 8, describe the normalisation process that you would undertake to remove data redundancy. (3 marks)

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**Question 10****(5 marks)**

Benchmarking is used widely within organisations.

- (a) Outline the purpose of benchmarking to determine system performance. (2 marks)

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- (b) Outline, with an example, how hardware benchmarking is used. (3 marks)

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**Question 12****(3 marks)**

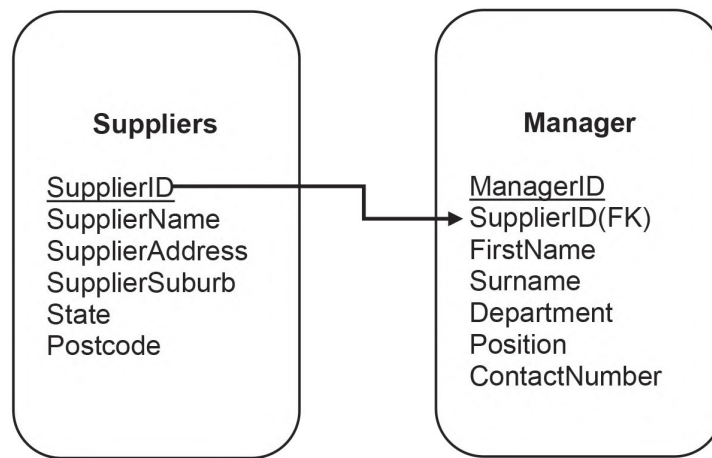
Refer to the entity relationship (ER) diagram below.



Resolve the many to many (M:N) relationship and draw an updated diagram to reflect the change.

**Question 21****(7 marks)**

Use the image below to answer all parts of the question.



- (a) Write a query using SQL that will list all the Supplier contact names in the city of Perth or Fremantle. (3 marks)

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- (b) Write a query using SQL that will update the ContactNumber for Steve Sales from Rafiki Building Supplies to 0410011001. Note: both tables must be used in this query. (4 marks)

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**Question 26** (continued)

- (d) Using Chen's notation, draw an entity relationship (ER) diagram that represents the database for the online grocery store.

Your diagram will need to resolve all many to many relationships.

(27 marks)

Note:

- one customer can place many orders
- many orders can have many items
- a customer can create many notes
- equally, an employee can create many notes
- many external delivery companies deliver many orders
- one role can have many employees
- one employee can pick many orders.

Include the following in your diagram:

- entities
- names of all primary keys
- names of all foreign keys
- relationships
- cardinality.

**Question 27** (continued)

- (d) Outline **one** reason for how the network design makes the data vulnerable. (2 marks)

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- (e) Explain why the Point of Sale (POS) system in relation to the network diagram in the Source booklet on page 4, may be experiencing slower network performance on weekends and school holidays. (3 marks)

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- (f) Describe **two** security methods the owners could implement to ensure internet café customers are unable to access their data. (4 marks)

One: \_\_\_\_\_

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Two: \_\_\_\_\_

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- (g) After receiving your feedback, the grocery store has asked you to redesign their network to improve its performance and security.

Design and draw using CISCO symbols an improved network for the company.  
Include in your answer the transport medium and network segmentation. (12 marks)