

HSC Enterprise Computing

Sample Examination

Marking Guidelines

Question 1

Criteria	Marks
• Provides the correct answer	1

Answer:

:: Identifying and defining
:: Researching and planning
:: Producing and implementing
:: Testing and evaluating

Question 2

Criteria	Marks
• Identifies the correct answer	1

Answer:

To summarise data

Question 3

Criteria	Marks
• Identifies the correct answer	1

Answer:

It allows accurate and reliable representation of the underlying information.

Question 4

Criteria	Marks
• Identifies the correct answer	1

Answer:

Providing multidimensional analysis of large volumes of data

Question 5

Criteria	Marks
• Identifies the correct answer	1

Answer:

To handle uncertainty in decision-making

Question 6

Criteria	Marks
• Correctly identifies examples of qualitative data	1

Answer:

Feedback received through interviews

Researchers' notes on student behaviour

Question 7

Criteria	Marks
• Correctly identifies examples of using data to tell a story	1

Answer:

Highlighting development trends from economic data

Demonstrating how temperature changes affect sea life population

Question 8

Criteria	Marks
• Correctly identifies the considerations when evaluating bias	1

Answer:

Source of the data

Accuracy of the data

How the data has been filtered

Question 9

Criteria	Marks
• Correctly determines if each feature is related to a sensor or actuator	1

Answer:

	Sensor	Actuator
Travels in a linear motion	☐	☒
Measures biometric data	☒	☐
Detects temperature variation	☒	☐
Uses compressed air to initiate an operation	☐	☒

Question 10

Criteria	Marks
• Correctly classifies all the components	2
• Correctly classifies TWO of the components	1

Answer:

	External entity	Process	Data flow	Data store
Bank	☒	☐	☐	☐
Confirmation	☐	☐	☒	☐
Orders	☐	☐	☐	☒
Payment	☐	☒	☐	☐

Question 11

Criteria	Marks
• Correctly completes all the sentences	2
• Correctly completes response box 1, 2, 3 or 4	1

Answer:

The project team started the task .

They planned to complete the task in .

They completed the task in .

The task was schedule by .

Question 12

Criteria	Marks
• Correctly identifies all entries in the data dictionary	3
• Correctly identifies 4 data types and 5 entries from the remaining data type/field size/key	2
• Correctly identifies a data type and the corresponding field size OR • Correctly identifies both keys	1

Answer:

Field name	Data Type	Data format	Field size	Key	Description
BookingID	Text	XXXNNN	6	Primary	Unique identifier for each booking
CustomerID	Text	XXXNNN	6	Foreign	ID of the customer in the Customer table
PickupLocation	Text		50		Address of pickup location
PickupTime	Date/Time	hh:mm	5		Preferred pickup time
Fare	Currency	###.##	6		Fare amount for the ride
PaidFare	Boolean	Y/N	1		Indicate if fare is paid

Question 13

Criteria	Marks
• Correctly completes all the sentences	2
• Correctly completes TWO sentences	1

Answer:

A particular *BookID* can appear in the *Book* table.

A particular *PublisherID* can appear in the *Book* table.

The *Book_Author* and *Author* tables have a relationship.

The *Book* and *Publisher* tables have a relationship.

Question 14

Criteria	Marks
• Identifies the correct category and provides an appropriate reason	2
• Provides some relevant information	1

Sample answer:

	Category of decision	Reason
Approving a car loan	Semi-structured	There is a process to follow but each application is different and has some level of judgement involved.
Calculating the cost for carpeting a room	Structured	There are fixed formulas based on room size, carpet price and installation fees.

Question 15

Criteria	Marks
• Explains how working remotely could affect project development	3
• Describes ONE way working remotely could affect project development OR • Outlines ways working remotely could affect project development	2
• Provides some relevant information	1

Sample answer:

Remote work can lead to challenges in communication, collaboration and coordination within the project team due to time zone differences, lack of face-to-face interaction and reliance on digital tools may slow decision-making and hinder team cohesion. However, it also offers access to global talent and flexibility as potential cost savings to allow the project to be delivered successfully.

Question 16

Criteria	Marks
• Discusses outsourcing in developing the new patient information system	4
• Outlines advantages and/or disadvantages of outsourcing	3
• Outlines some features of outsourcing	2
• Provides some relevant information	1

Sample answer:

Outsourcing of the development can offer benefits such as access to specialised expertise, cost savings and faster delivery. External developers could bring experience with healthcare technologies and regulatory compliance, which can enhance system quality.

Challenges introduced due to outsourcing include potential data security risks, communication barriers, and loss of control over the project. The medical centre must also spend time to carefully select a reputable outsourcing company. Requirements must clearly defined and strong oversight mechanisms must be established such as weekly with the outsourcing company.

Question 17 (a)

Criteria	Marks
• Explains how blockchain technology can be used in the scenario	3
• Describes how blockchain technology can be used in the scenario OR • Outlines features of blockchain technology	2
• Provides some relevant information	1

Sample answer:

Blockchain can store unique digital detail in a decentralised ledger. Once issued, the ticket's data is immutable and transparent, preventing counterfeiting. As all transactions are stored in a blockchain the authenticity of the ticket is ensured. Sellers can be guaranteed that the purchaser has paid, and the transaction is verified.

Question 17 (b)

Criteria	Marks
• Explains how intelligent agents could be used in the app	3
• Describes how intelligent agents could be used in the app OR • Outlines features of intelligent agents	2
• Provides some relevant information	1

Sample answer:

For buyers, intelligent agents can be used to analyse patterns of previous activity such as searches and purchases to provide information such as upcoming events, real-time assistance during searches and real-time notifications when new tickets become available. For sellers, intelligent agents can alert the seller if there are new potential buyers in the system.

Question 18

Criteria	Marks
• Discusses social and ethical issues that need to be considered	4
• Outlines social and ethical issues that need to be considered	3
• Outlines ONE relevant social or ethical issue OR • Identifies relevant social and/or ethical issues	2
• Provides some relevant information	1

Sample answer:

Developing an intelligent hiring system allows the company to apply a set standard or criteria to review the applications and avoid potential human conflicts of interest. It enhances transparency to ensure applicants understand how decisions are made. However, there's a risk of bias in résumé analysis and role suitability assessments, potentially leading to discrimination based on gender, age, or background. Data privacy is another concern, as sensitive personal information must be securely handled.

Question 19

Criteria	Marks
Compares the suitability of using the agile and waterfall approaches in the scenario	4
- Outlines features of the agile and waterfall approaches OR - Describes the suitability of using the agile or waterfall approach in the scenario	3
- Identifies features of the agile and/or waterfall approaches OR - Outlines a feature of the agile or waterfall approach	2
Provides some relevant information	1

Sample answer:

Agile would be the more suitable development method as it allows for multiple iterative deliverables with shorter timeframes and plenty of input from stakeholders, in this case teachers. This iterative feedback from teachers can be used to ensure the online learning system more closely matches any changing needs. The waterfall development method has a longer delivery cycle with the teachers needing to provide their input during the initial requirements phase with little opportunity to provide ongoing input.

Question 20 (a)

Criteria	Marks
Justifies a software tool that could be used to develop the data visualisations	2
Provides some relevant information	1

Sample answer:

A spreadsheet is a cost-effective tool for creating basic data visualisations. It offers easy-to-use charts, pivot tables, and filtering options, enabling quick analysis of customer behaviour and product trends.

Question 20 (b)

Criteria	Marks
Outlines the steps to create the data visualisations	3
Outlines some steps to create the data visualisations	2
Provides some relevant information	1

Sample answer:

To create data visualisations, first research customer behaviour patterns. Gather relevant data from browsing, purchasing, and returns. Organise the data by categories like product type and demographics. Store in a structured format. Use visualisation tools to create insights.

Question 20 (c)

Criteria	Marks
• Describes risks in the use of data mining in the scenario	3
• Describes ONE risk in the use of data mining in the scenario OR • Outlines some risks related to the use of data mining	2
• Provides some relevant information	1

Sample answer:

Data mining is the process of finding patterns and relationships in large data sets. However, if the data is inaccurate, limited, or biased, it can lead to faulty conclusions. Relying heavily on past purchasing trends may ignore emerging customer needs or changing preferences. When deciding which new products to offer, the risk of poor product recommendations could arise from inaccurate data or failure to account for shifting trends.

Question 21 (a)

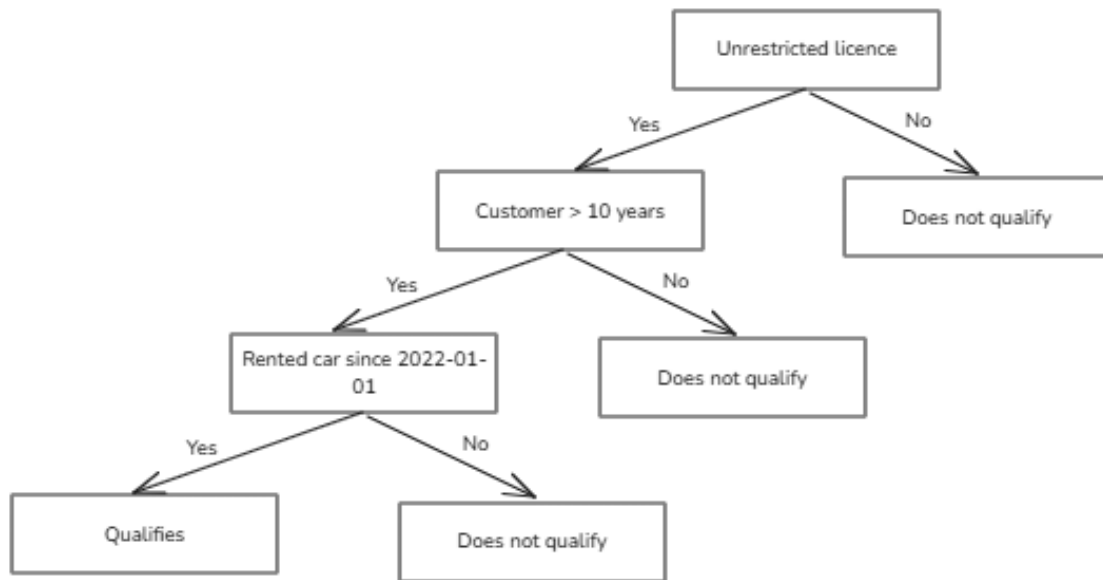
Criteria	Marks
• Identifies the correct answer	1

Answer:

Pilot

Question 21 (b)

Criteria	Marks
• Draws an appropriate decision tree that includes all the rules	3
• Draws a decision tree with some of the rules	2
• Shows some understanding of the requirement	1

Sample answer:**Question 21 (c)**

Criteria	Marks
• Provides a correct SQL statement	3
• Provides a partially correct SQL statement	2
• Shows some understanding of SQL	1

Sample answer:

```

SELECT Customers.FirstN, Customers.LastN, Customers.MemYrs,
Rentals.LastRentedDate

```

```

FROM Customers, Rentals

```

```

WHERE Customers.Licence = "Unrestricted"

```

```

    AND Customers.CustID = Rentals.CustID

```

```

    AND Customers.MemYrs > 10

```

```

    AND Rentals.LastRentedDate > "2022-01-01"

```

```

ORDER BY Customers.LastN

```

Question 22 (a)

Criteria	Marks
• Shows thorough understanding of how the autofill feature can affect the privacy of customers	3
• Outlines features of autofill and/or the effect of autofill on privacy	2
• Provides some relevant information	1

Sample answer:

The autofill feature may populate personal information fields with sensitive data if the user has previously entered this information elsewhere on the web, leading to accidental disclosure of personal information. Some browser extensions may also have access to autofill data which could lead to unauthorised access.

Question 22 (b)

Criteria	Marks
• Explains the benefits of using a neural network over an expert system in this scenario	3
• Describes ONE benefit of a neural network over an expert system in this scenario OR • Outlines features of a neural network and/or expert system	2
• Provides some relevant information	1

Sample answer:

A neural network can automatically learn from large datasets, identifying complex patterns in customer behaviour that an expert system may struggle to capture. It adapts over time, improving recommendations based on evolving customer preferences. Unlike expert systems, which rely on predefined rules, neural networks provide more flexibility, scalability, and accuracy in analysing diverse banking histories to personalise product recommendations.

Question 23 (a)

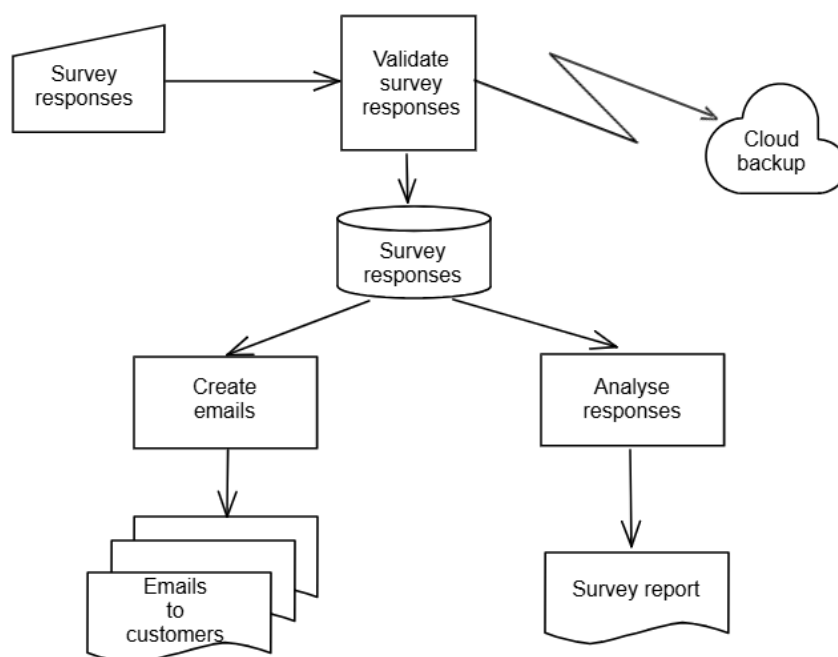
Criteria	Marks
• Describes how the application of simulation may be useful for the company to improve its processes	3
• Outlines some features of the application of simulation	2
• Provides some relevant information	1

Sample answer:

The application of simulation can help the company model and test various process improvements before implementation, reducing risks and costs. By simulating different scenarios, such as changes in workflows or customer interactions, the company can identify inefficiencies, forecast outcomes and optimise operations. This allows for data-driven decisions, ensuring that improvements are effective and aligned with customer feedback gathered through the survey.

Question 23 (b)

Criteria	Marks
• Provides a system flowchart that correctly represents the process using appropriate symbols and labels	3
• Provides a system flowchart that shows sound understanding of the process	2
• Shows some understanding of system flowcharts	1

Sample answer:

Question 24

Criteria	Marks
Designs correct formulae for cells D3 to D7 and designs correct formula for E3 to fill down to cells E4 to E7	4
Provides substantially correct formulae for cells D3 to D7 and E3	3
Shows some understanding of formulae design using IF and/or LOOKUP	2
Provides some relevant information	1

Sample answer:

D3: =IF(C3=0,"Out of Stock", B3*C3)

D4: =IF(C4=0,"Out of Stock", B4*C4)

D5: =IF(C5=0,"Out of Stock", B5*C5)

D6: =IF(C6=0,"Out of Stock", B6*C6)

D7: =IF(C7=0,"Out of Stock", B7*C7)

E3: =VLOOKUP(B3, \$B\$11:\$C\$13,2)

Question 25

Criteria	Marks
- Makes an informed judgement about the effectiveness of the interactive dashboard - Supports the answer with comprehensive reference to user experience and the ability of the dashboard to assist management in tracking trends and forecasting sales	8
- Makes a judgement about the effectiveness of the interactive dashboard - Supports the answer with reference to user experience and the ability of the dashboard to assist management in tracking trends and/or forecasting sales	6–7
- Describes the effectiveness of the interactive dashboard - Outlines some advantages and/or disadvantages of the dashboard's features	4–5
Outlines feature(s) of the interactive dashboard	2–3
Provides some relevant information	1

Answers could include:

A positive or negative judgement based on one or more of the following:

Positives:

- Good use of interactivity with the filters and the updating of the display
- Good to see aggregated key performance factors such as the Total Orders, average price of orders and Total sales in dollars
- Multiple selections across the filters allows for drilling down into the data to a micro level
- All of the past information is displayed so there is a lot of data (10 000 total orders) to track trends
- Dashboard fits on a single page.

Negatives:

- Some of the data visualisations are cluttered so that important information is missing or hard to read (suburb sales data visualisation)
- No consistency of colours used across visualisations
- Could have used some form of colouring within the Total Revenue for each flavour visualisation to indicate the highest and lowest
- Poor use of colours for the Season visualisation and the Total Revenue visualisation
- Not all visualisations are labelled appropriately which could lead to misunderstanding by the audience
- The filters are not grouped in any order with some either side of the sales by suburb visualisation – poor for ergonomics
- The filter for suburb is very long and requires scrolling – hard to see which suburbs are selected for the shown visualisations
- The season filter has capital letter, while the other filters have lower case letters
- When a season and flavour is selected in the filters, there is only one value shown in each
- Hard to see overall trends across all visualisations.

HSC Enterprise Computing Sample Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes	Targeted performance bands
1	1	Enterprise project – enterprise project steps	EC-12-08	2–3
2	1	Data science – pivot table	EC-12-05	2–3
3	1	Data visualisation – data integrity	EC-12-03	2–3
4	1	Data visualisation – OLAP	EC-12-05	2–3
5	1	Intelligent systems – fuzzy logic	EC-12-04	3–4
6	1	Data science – qualitative data	EC-12-04	3–4
7	1	Data visualisation – purposes of data visualisation	EC-12-04	3–4
8	1	Data visualisation – bias	EC-12-03	3–4
9	1	Intelligent systems – sensors and actuators	EC-12-08	3–4
10	2	Enterprise project – data flow diagram	EC-12-08	2–4
11	2	Enterprise project – Gantt chart	EC-12-09	2–4
12	3	Data science – data dictionary	EC-12-08	2–4
13	2	Data science – relational database	EC-12-05	4–6
14	2	Intelligent systems – decision support systems	EC-12-01	2–4
15	3	Enterprise project – working remotely	EC-12-08	2–4
16	4	Enterprise project – outsourcing	EC-12-07	2–5
17 (a)	3	Data science – blockchain technology	EC-12-06	3–5
17 (b)	3	Intelligent systems – intelligent agents used by search engines	EC-12-06	2–4
18	4	Intelligent systems – social and ethical issues	EC-12-07	2–5
19	4	Enterprise project – development approach – agile and waterfall	EC-12-09	2–5
20 (a)	2	Data visualisation – software tools	EC-12-03	2–4
20 (b)	3	Data visualisation – creation	EC-12-06	3–5
20 (c)	3	Data science – risks of data mining	EC-12-04	3–5
21 (a)	1	Enterprise project – implementation method	EC-12-09	2–3
21 (b)	3	Intelligent systems – decision tree	EC-12-08	2–4
21 (c)	3	Data science – SQL	EC-12-05	3–5
22 (a)	3	Data science – autofill	EC-12-07	3–5
22 (b)	3	Intelligent systems – neural network	EC-12-10	3–5
23 (a)	3	Intelligent systems – application of simulation	EC-12-06	2–4
23 (b)	3	Enterprise project – system flowchart	EC-12-08, EC-12-11	3–6
24	4	Data science – spreadsheet	EC-12-05	2–6
25	8	Data visualisation – interactive dashboard, user experience, trends and forecasts	EC-12-02, EC-12-04, EC-12-06	2–6