
2021 HSC Information Processes and Technology Marking Guidelines

Section I

Multiple-choice Answer Key

Question	Answer
1	B
2	A
3	B
4	C
5	D
6	B
7	A
8	D
9	C
10	C
11	A
12	C
13	B
14	D
15	A
16	C
17	D
18	C
19	A
20	B

Section II

Question 21 (a)

Criteria	Marks
<ul style="list-style-type: none"> States what data redundancy is and provides an example 	2
<ul style="list-style-type: none"> Identifies a feature of data redundancy 	1

Sample answer:

Data redundancy is the unnecessary repetition or duplication of data within a database. For example, including names of parents in a student table may introduce data redundancy if there are siblings in the same school.

Question 21 (b) (i)

Criteria	Marks
<ul style="list-style-type: none"> Identifies data types and field sizes for Phone_Number and Deposit_Paid with justifications for data types 	3
<ul style="list-style-type: none"> Provides all required details for Phone_Number or Deposit_Paid <p>OR</p> <ul style="list-style-type: none"> Identifies data types and/or field sizes for Phone_Number and Deposit_Paid 	2
<ul style="list-style-type: none"> Identifies a data type or field size 	1

Sample answer:

Field name	Data type	Field size	Justification for choice of data type
Phone_Number	Number	10	It is easier to search this field as a numeric field rather than text
Deposit_Paid	Boolean	1	Boolean is an appropriate data type as this is a yes (Y) or no (N) type of answer.

Question 21 (b) (ii)

Criteria	Marks
• Shows how to calculate the size of the booking table in megabytes	2
• Provides some relevant information	1

Sample answer:

$$\frac{(5 + 25 + 25 + \textcircled{10} + 1 + \textcircled{1}) \times 200}{1024 \times 1024}$$

Field size of Phone_Number

Field size Deposit_Paid

To convert to megabytes

Answers could include:

To calculate the size of the booking table add together all the field sizes to get the total for the number of bytes for 1 record. Then multiply by 200 (the total number of records in the booking table). Then divide by 1024 × 1024 to get the answer in megabytes.

Question 21 (b) (iii)

Criteria	Marks
• Provides a correct SQL statement	3
• Provides a partially completed SQL statement	2
• Provides some relevant information	1

Sample answer:

```
SELECT First_Name, Last_Name
FROM Booking
WHERE No_of_guests >1
ORDER BY Last_Name ASC
```

Question 22 (a)

Criteria	Marks
<ul style="list-style-type: none"> Provides TWO reasons why the email is suspicious 	2
<ul style="list-style-type: none"> Provides ONE reason why the email is suspicious 	1

Sample answer:

The sender's email address is suspicious as '125pos@inf.au' doesn't align to standard domain names and the word 'address' is spelt incorrectly.

Answers could include:

The email indicates that the user can only respond by clicking on the link. There is no way for the user to email the company directly.

There are threats that if the user doesn't respond, ie update their personal data within a period of time, they would be required to pay a holding fee.

The email is not personalised and companies should know who you are, if your details are not updated.

Question 22 (b)

Criteria	Marks
<ul style="list-style-type: none"> Describes issues related to the system 	3
<ul style="list-style-type: none"> Outlines an issue related to the system <p>OR</p> <ul style="list-style-type: none"> Identifies issues related to the system 	2
<ul style="list-style-type: none"> Identifies a relevant issue 	1

Sample answer:

Privacy, as the business is collecting a customer's personal details when they use the check-in system. The customer's details will need to be securely stored and the customer given an indication of the length of time the business will store this data. Security, as the business will need to ensure that the system is secure from potential unauthorised access and possible identity theft.

Answers could include:

Ownership of data as once a customer uses the system, the business owns the data. It is the responsibility of the business to inform the customers of how the data could be used and whether or not they intend to pass the customers' details to another organisation.

Question 22 (c)

Criteria	Marks
• Uses examples to describe how phased and pilot conversions differ	3
• Shows some understanding of phased and/or pilot conversions	2
• Identifies a feature of a conversion method	1

Sample answer:

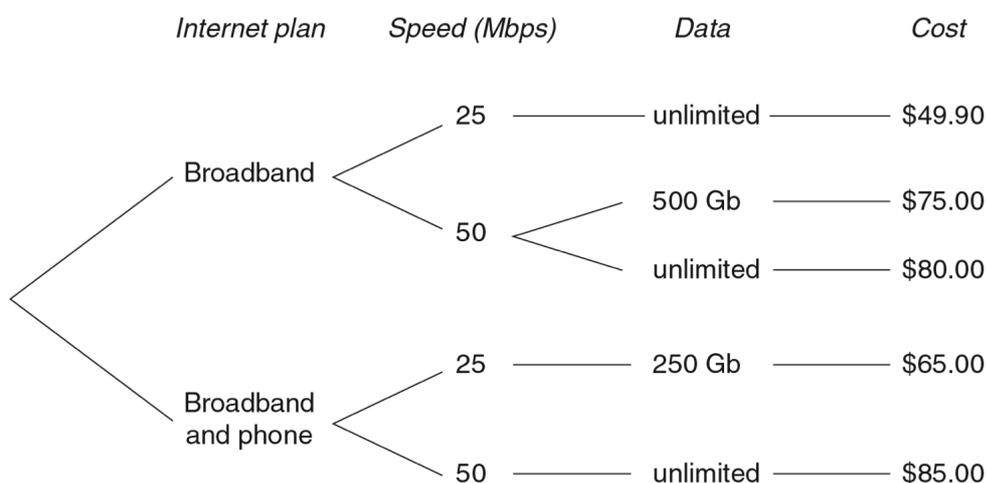
Phased conversion involves a gradual introduction of the new system in phases or stages, while at the same time replacing parts of the old system. For example the Opal card system replacing paper tickets on ferries then for all modes of public transport.

Pilot conversion involves the new system being installed for a small group of users to learn, use and evaluate the new system while the remaining users still use the current system. For example, the Opal card system being used firstly on ferries then extended to all modes of public transport.

Question 22 (d)

Criteria	Marks
• Draws a substantially correct decision tree showing all rules and actions	3
• Draws a decision tree showing understanding of some rules and actions	2
• Identifies a feature of a decision tree	1

Sample answer:



Question 23 (a)

Criteria	Marks
• Discusses the use of a star and a ring topology for the new network	3
• Shows some understanding of the star and/or ring topology	2
• Identifies a feature of a topology	1

Sample answer:

A star topology will enable functionality of all nodes as long as the central computer is functioning. This means that if a node or a cable to a node stops working, the network continues to operate. A central computer helps minimise data collisions as a star topology uses an Ethernet protocol and CSMA/CD to manage the flow of data. This topology is expensive to set up.

A ring topology could be used as it doesn't require as many nodes or a central computer, which is more effective. This topology uses a token ring protocol to manage the flow of data and minimise collisions as there are fewer nodes transmitting data. If a cable or node stops working, the system doesn't work.

Question 23 (b)

Criteria	Marks
• Shows how microwave transmission and satellite transmission are similar and/or different	3
• Shows some understanding of microwave transmission and/or satellite transmission	2
• Identifies a feature of microwave or satellite transmission	1

Sample answer:

Microwave transmission requires a clear line of sight. It can be a very secure form of communication. If a signal needs to be transmitted over a short distance, it can be enough to erect two antennae with a clear line of sight. The signal can then be transmitted between the two receivers.

Satellite transmission, like microwave, works best when there is a line of sight between sender and receiving satellite. It operates over a larger distance than microwave as satellite receivers can be orbiting the earth, giving greater connectivity and transmission.

Question 23 (c)

Criteria	Marks
<ul style="list-style-type: none"> Describes how internet, intranet and extranet technologies can be used in the system 	4
<ul style="list-style-type: none"> Describes how TWO of the technologies (internet, intranet and extranet) can be used in the system <p>OR</p> <ul style="list-style-type: none"> Outlines how internet, intranet and extranet technologies can be used in the system 	3
<ul style="list-style-type: none"> Shows some understanding of internet and/or intranet and/or extranet technologies 	2
<ul style="list-style-type: none"> Identifies a feature of internet or intranet or extranet technology 	1

Sample answer:

The internet would be used by the customers and prospective customers to view the new features of online banking being offered by the bank. The bank uses the internet to promote and provide information about features of their online banking for the public.

Employees working from home use the internet in order to log into the bank's intranet to gain access to shared information, files and applications in a local area network. The bank's intranet is protected by firewalls and by the need to log on with a username and secure password.

An extranet would provide controlled access to authorised customers to access their online bank accounts via a web portal. The customers would log on securely using a username and password.

Question 24 (a)

Criteria	Marks
<ul style="list-style-type: none"> Describes aspects that should be considered when assessing the feasibility of the system 	4
<ul style="list-style-type: none"> Outlines aspects that should be considered when assessing the feasibility of the system 	3
<ul style="list-style-type: none"> Identifies aspects that should be considered when assessing feasibility OR <ul style="list-style-type: none"> Outlines an aspect that should be considered when assessing feasibility 	2
<ul style="list-style-type: none"> Identifies an aspect of feasibility 	1

Sample answer:

Economic – sufficient funds for the development, testing and maintenance of the system.
Cost involved in acquiring the new technology, ie data and web server.

Technical – healthcare providers will need to ensure that their current information technology is compatible with the new system, ie the video conferencing software is compatible.

Scheduling – development of the new system to ensure that it will be ready to use within the six-month time period.

Operational – changing nature of work for both the healthcare workers and patients. Some patients may not have access to the technology in order to participate in a video call with healthcare workers.

Question 24 (b)

Criteria	Marks
<ul style="list-style-type: none"> Provides a description of the system in terms of users, participants, data, information and the information process of displaying 	5
<ul style="list-style-type: none"> Describes the system showing understanding of most of these components: users, participants, data, information and the information process of displaying 	4
<ul style="list-style-type: none"> Outlines users, participants, data, information and the information process of displaying for the system <p>OR</p> <ul style="list-style-type: none"> Describes the system in terms of some of the components 	3
<ul style="list-style-type: none"> Identifies features of users and/or participants and/or data and/or information and/or displaying 	2
<ul style="list-style-type: none"> Provides some relevant information 	1

Sample answer:

The patients are users of the new system when they login to the system and use the video conferencing software to speak with the healthcare providers. The healthcare providers are participants in the new system when they access the patient's medical records from the national database and then update these records.

Data is collected from each patient during their consultation with the healthcare worker. The patient's medical records are updated after the consultation. Video data is collected as each consultation with the healthcare worker is recorded. The information is the updated medical records of the patients and video after each consultation by the healthcare worker. The information is then uploaded into the national database.

Displaying includes screens and speakers used by the patient and healthcare worker during the video-conferencing sessions. Screens are used when the healthcare workers view patients' medical records.

Section III

Question 25 (a)

Criteria	Marks
• Justifies a situation where real time processing is essential	3
• Outlines a situation where real time processing is essential	2
• Identifies a feature of real time processing	1

Sample answer:

An airline ticket reservation system is an example of real time processing. When an individual books a ticket and then selects a seat, the booking is made right away. This means that no-one else is able to book the same seat. Any changes made to the reservation are also updated in real time.

Question 25 (b)

Criteria	Marks
• Describes two forms of suitable storage media for backing up the system	3
• Outlines two forms of suitable storage media for backing up the system OR • Describes a suitable storage medium for backing up the system	2
• Identifies a feature of storage	1

Sample answer:

External hard drives are easy to use, easily transportable and can be read by multiple devices. They can be stored onsite or offsite. External hard drives are secure and do not rely on cloud storage which can go offline.

Tape drives can store more data than an external hard drive. They can be stored onsite or offsite. They are very economical by comparison to external hard drives.

Question 25 (c)

Criteria	Marks
<ul style="list-style-type: none"> • Designs a screen for collecting the required data • Labels the design features 	4
<ul style="list-style-type: none"> • Designs a screen that shows most of the design features 	3
<ul style="list-style-type: none"> • Designs a screen that shows some design features 	2
<ul style="list-style-type: none"> • Provides some relevant information 	1

Sample answer:

< Business name >	}	Label
< Customer feedback >		
Age range ▼		Drop down
< Customer satisfaction >		Label
<input checked="" type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1		Radio box
< Choose 3 available services >		Label
<input type="checkbox"/> Service 1 <input type="checkbox"/> Service 2 <input type="checkbox"/> Service 3	}	Check box
<input checked="" type="checkbox"/> Service 4 <input type="checkbox"/> Service 5		
< General comment >		Label
		Text box
Clear form	Submit	Buttons

Question 25 (d)

Criteria	Marks
• Discusses the use of RFID tags in this scenario	4
• Outlines advantages and/or disadvantages of using RFID tags in this scenario	3
• Identifies some features of RFID tags	2
• Identifies a feature of an RFID tag	1

Sample answer:

The advantages of RFID tags to keep track of books in this library are that they can be used to help indicate the location of a book in the library's collection, whether it is on a shelf or elsewhere in the library or borrowed. RFID tags in books will help speed up borrowing and returns since there is no need for staff to physically process barcodes.

A disadvantage of RFID tags in keeping track of books is that if the incorrect information is tagged to an RFID chip, that incorrect information will display throughout the library catalogue. This will also affect borrowers since they will have the wrong book loaned to them.

Question 25 (e)

Criteria	Marks
<ul style="list-style-type: none"> Explains how the use of data warehousing would benefit the department store 	6
<ul style="list-style-type: none"> Describes how the use of data warehousing would benefit the department store 	5
<ul style="list-style-type: none"> Outlines the benefits of using data warehousing in the department store 	4
<ul style="list-style-type: none"> Outlines features of data warehousing 	3
<ul style="list-style-type: none"> Identifies some features of data warehousing OR	2
<ul style="list-style-type: none"> Outlines a feature of data warehousing 	
<ul style="list-style-type: none"> Identifies a feature of data warehousing 	1

Sample answer:

Data warehousing would benefit this department store by allowing for improved performance of the daily transaction system. Each transaction may relate to numbers of items bought from different departments and paid for by different methods. The data warehouse will be able to track the stock available, the age of the stock, what stock has been purchased, accounts payable and invoicing.

The data warehouse will be able to store all the data more easily since all the data resides in place. The data can be held with greater levels of security and privacy, with only authorised employees having access to this material.

Data warehousing also collects data relating to each customer such as payment methods and purchases which facilitates data mining. The department store can then send out promotional material targeting specific customers.

Question 26 (a)

Criteria	Marks
<ul style="list-style-type: none"> Describes how what-if models are used to support decision making 	3
<ul style="list-style-type: none"> Shows some understanding of what-if models 	2
<ul style="list-style-type: none"> Identifies a feature of a what-if model 	1

Sample answer:

What-if models allow the user to analyse the results when using different input values in one or more formulas in the spreadsheet to explore all the various results. These alternate results are compared and the best option can be identified. This method is a suitable way for both companies and individuals to come up with different scenarios. The best result can then be carefully chosen by examining the various results.

Question 26 (b)

Criteria	Marks
<ul style="list-style-type: none"> Recognises the differences between semistructured and unstructured decision support systems Includes an example of each 	3
<ul style="list-style-type: none"> Outlines features of semistructured and/or unstructured decision support systems 	2
<ul style="list-style-type: none"> Identifies a feature of a semistructured or unstructured decision support system 	1

Sample answer:

An unstructured decision support system involves a lot of unknowns and there is no definitive method for reaching a decision. Often the decision is based on available evidence, experience and understanding of the situation. An example of an unstructured decision support system is predicting share or stock prices.

A semistructured decision support system is one in which most of the factors needed for making the decision are known but human experience and other outside factors may still play a role. An example of a semistructured decision support system would be diagnosing a medical condition.

Question 26 (c)

Criteria	Marks
<ul style="list-style-type: none"> Describes the advantages and disadvantages of using a group decision support system in this scenario 	4
<ul style="list-style-type: none"> Outlines advantages and/or disadvantages of using a group decision support system in this scenario 	3
<ul style="list-style-type: none"> Identifies some features of a group decision support system 	2
<ul style="list-style-type: none"> Identifies a feature of a group decision support system 	1

Sample answer:

An advantage of using a group decision support system (GDSS) is the ability for virtual meetings, allowing the managers to meet more frequently. GDSS provides the conference room setting and various software tools that facilitate users in different locations making decisions as a group. The company's managers all have the ability to contribute to the meeting, creating a collaborative atmosphere.

The disadvantages of using a GDSS is the initial cost of setting up the technology and training managers to use the system effectively. The virtual meeting can be impacted by technical failures such as loss of power, other hardware failures or connectivity issues.

Question 26 (d)

Criteria	Marks
<ul style="list-style-type: none">Explains how a geographic information system supports decision makingIncludes an example	4
<ul style="list-style-type: none">Describes features of a geographic information system	3
<ul style="list-style-type: none">Identifies features of a geographic information system OR	2
<ul style="list-style-type: none">Outlines a feature of a geographic information system	
<ul style="list-style-type: none">Identifies a feature of a geographic information system	1

Sample answer:

A geographic information system (GIS) assists in the preparation, analysis, display, and management of geographical data. It is the analysis and display functions within a GIS that support the decision making. It analyses the spatial location and organises layers of information into maps and 3D scenes. GIS datasets allow individuals and organisations to examine patterns, relationships and situations. Problems can be understood and analysis from a real-world perspective helps users make smarter decisions.

An example is Google Earth.

Question 26 (e)

Criteria	Marks
<ul style="list-style-type: none"> Justifies whether an expert system or a neural network is more suitable with reference to both methods 	6
<ul style="list-style-type: none"> Describes relevant features of an expert system and a neural network Provides some justification as to which method is more suitable 	5
<ul style="list-style-type: none"> Describes relevant features of an expert system and a neural network 	4
<ul style="list-style-type: none"> Outlines features of an expert system and a neural network OR <ul style="list-style-type: none"> Describes relevant features of an expert system or a neural network and justifies the suitability of that method 	3
<ul style="list-style-type: none"> Outlines a feature of an expert system or a neural network OR <ul style="list-style-type: none"> Identifies features of an expert system and/or a neural network 	2
<ul style="list-style-type: none"> Identifies a feature of an expert system or a neural network 	1

Sample answer:

An expert system is a computer program that simulates the knowledge and experience of a human expert. Facts for the knowledge base would be acquired from human experts and relate to driving patterns and steering angles in different driving conditions. The knowledge base is then represented as a series of 'if-then' rules. The inference engine interprets the facts in the knowledge base in order to be able to command the drone to fly safely, avoiding collisions and obstacles.

Neural networks involve machine learning, in which a computer learns by analysing training examples. In the drone system, the images captured to analyse the driving patterns, steering angles and to avoid collisions are the data sets that are inputted into the neural network to form a set of training situations in order to train the drone system to navigate safely.

A neural network would be more suitable for developing the drone system. The system learns to perform different tasks by considering the different situations without being programmed with task-specific rules as would be required with an expert system.

Question 27 (a)

Criteria	Marks
<ul style="list-style-type: none"> Describes how discrete processing can be used in an automated manufacturing system Includes an example 	3
<ul style="list-style-type: none"> Outlines a feature of discrete processing in an automated manufacturing system 	2
<ul style="list-style-type: none"> Identifies a feature of processing 	1

Sample answer:

Discrete processing can be used in an automated manufacturing system as it enables it to perform a single task in a small interval of time to produce the final product. An example of this could be when designing a phone case to the exact specifications of a customer.

Question 27 (b)

Criteria	Marks
<ul style="list-style-type: none"> Recognises the differences between CAD and CAM Uses an example to support answer 	3
<ul style="list-style-type: none"> Outlines a feature of CAD or CAM 	2
<ul style="list-style-type: none"> Identifies a feature of CAD or CAM 	1

Sample answer:

Computer-aided design (CAD) is software used to create accurate 2D drawings and 3D models. Computer-aided manufacturing (CAM) is the use of software and computer-controlled machinery to automate the manufacturing process. An example is a product designed using the CAD software and the data is then loaded into a CAM system that uses devices such as a CNC lathe to produce the model.

Question 27 (c)

Criteria	Marks
<ul style="list-style-type: none"> Justifies situations where the use of an AMS would be beneficial 	4
<ul style="list-style-type: none"> Describes situations where the use of an AMS would be beneficial OR	3
<ul style="list-style-type: none"> Justifies a situation where the use of an AMS would be beneficial 	2
<ul style="list-style-type: none"> Outlines a situation where the use of an AMS would be beneficial 	2
<ul style="list-style-type: none"> Identifies a feature of AMS 	1

Sample answer:

The manufacturing of bicycles is a situation that would benefit from the use of an automated manufacturing system. Quality control ensures consistency of the structural quality when manufacturing each bicycle. The AMS can be calibrated so that every bicycle produced meets safety requirements.

In situations such as computer embroidery where repetitive tasks and reliability are necessary, using an AMS ensures greater consistency of the pattern and stitch size for each item. Reliability is important to ensure consistent quality of manufacturing.

Question 27 (d)

Criteria	Marks
• Defines noise in an AMS and techniques for reducing it	4
• Describes noise in an AMS and techniques for reducing it	3
• Identifies features of noise in relation to signals	2
• Identifies a feature of noise	1

Sample answer:

Noise is unwanted data or interference that reduces the quality of the signal in an automated manufacturing system. Techniques to reduce noise include filtering to remove unwanted features from signals before the input is used in an automated manufacturing system. Shields can be placed around cables to prevent random and periodic noise.

Question 27 (e)

Criteria	Marks
• Explains the technologies required for the system	6
• Describes the technologies required for the system and provides some explanation	5
• Describes the technologies required for the system	4
• Outlines technologies for the system	3
• Identifies some technologies for the system	2
OR	
• Outlines a technology for the system	1
• Provides some relevant information	

Sample answer:

The technologies required in this robotic system include sensors, actuators and barcode readers. Sensor technologies in this robot would include motion sensors, to determine how far it is from a shelf or hazards that need to be cleaned up, and light sensors to determine if shelves are empty and require restocking.

Actuators required in this robotic system include a stepper motor that allows the robot to move with precision and move at slow speeds. Another actuator that could be used is a relay actuator in the form of a robot that picks up stock and places it on a shelf and automatically switches off when the shelf is full.

Barcode reader technology is required so that the robotic device can stock the shelf with the correct product.

Question 28 (a)

Criteria	Marks
• Describes how virtual reality is used in entertainment	3
• Outlines a feature of virtual reality	2
• Identifies a feature of virtual reality	1

Sample answer:

Virtual reality use in entertainment enables people to be immersed in experiences such as attending concerts, museums and galleries without having to be physically present. For example, people attending a concert can view 3D images and high quality audio to give a realistic feel of being at the concert.

Question 28 (b)

Criteria	Marks
• Recognises the differences between the software for video processing and animation • Includes an example of each	3
• Shows some understanding of software for video processing and/or animation	2
• Identifies a feature of software for video processing or animation	1

Sample answer:

Video processing software allows the user to manage material such as raw camera footage, audio such as dialogue and sound effects, graphics and special effects to produce a video product. Video processing software can be used to produce items such as movies, TV shows or short clips for websites.

Animation software enables users to generate moving graphics from image files. Users choose whether to animate using cel-based or path-based animation techniques. Examples of animation can be seen in children’s cartoons and the creation of short animated gifs popular on social media platforms.

Question 28 (c)

Criteria	Marks
<ul style="list-style-type: none"> Explains how the sampling rate affects the size of an audio file 	4
<ul style="list-style-type: none"> Describes how the sampling rate affects the size of an audio file OR	3
<ul style="list-style-type: none"> Shows a thorough understanding of sampling rate 	
<ul style="list-style-type: none"> Identifies features of sampling rate OR	2
<ul style="list-style-type: none"> Outlines a feature of sampling rate 	
<ul style="list-style-type: none"> Identifies a feature of sampling rate 	1

Sample answer:

Sampling rate is how many times per second audio is sampled to convert it into a digital file. The more samples per second, the better the audio quality. In turn, an increase in sampling rate will increase the file size of audio. The number of bits, duration of the audio and whether the audio is in mono or stereo, all affect the file size.

Question 28 (d)

Criteria	Marks
<ul style="list-style-type: none"> Describes fields of expertise required for the MMS system 	4
<ul style="list-style-type: none"> Outlines fields of expertise required for the MMS system 	3
<ul style="list-style-type: none"> Identifies fields of expertise associated with the development of the system OR	2
<ul style="list-style-type: none"> Outlines a field of expertise associated with the development of the system 	
<ul style="list-style-type: none"> Provides some relevant information 	1

Sample answer:

A graphic designer would be responsible for creating all the visual stimuli used in the app/program such as logos, icons and navigation buttons/hyperlinks. Making these features aesthetically pleasing ensures that the intended audience can interact with the software and be able to control their appliances with ease as well as navigate through the application. A video editor will be able to design short self-help guides to enable all users to learn how to use the system.

A system designer assesses the needs of the home appliance manufacturing company to determine the requirements of the new system. They work with analysts on the feasibility of a conceptual design by using the technical specifications prepared by the analyst.

Question 28 (e)

Criteria	Marks
<ul style="list-style-type: none"> Identifies components of technical and ethical issues and storing and retrieving in the system and the relationships between them Draws out and relates implications 	6
<ul style="list-style-type: none"> Describes technical and ethical issues and storing and retrieving in the system Relates some implications 	5
<ul style="list-style-type: none"> Outlines a technical issue, an ethical issue and storing and retrieving in the system 	4
<ul style="list-style-type: none"> Identifies components of technical and ethical issues and storing and retrieving in the system 	3
<ul style="list-style-type: none"> Identifies features of technical issue(s) and/or ethical issue(s) and/or storing and retrieving 	2
<ul style="list-style-type: none"> Provides some relevant information 	1

Sample answer:

A technical issue of the system is sufficient bandwidth to upload and to share files, eg podcasts, music, with other users across the network. If bandwidth is compromised, larger files such as television programs and movies will take longer to stream with potential issues with buffering.

Ethical issues include copyright as users who upload content need to acknowledge sources and ownership of original material. Music and movie files are bound by laws protecting their distribution in public domains. System creators need to acknowledge the source data of all materials and be mindful of material which is not suitable to be uploaded. Breaches of copyright may result in fines or harsh penalties.

As a result of technical issues, greater storage capacity is required by the system to allow multimedia products to be stored at high resolutions. Movies and music generate large files that need their quality maintained, appropriate compression techniques need to be adopted to ensure the user has the optimal experience when sharing, viewing or storing data. Sufficient storage space will allow users to access more resources.

2021 HSC Information Processes and Technology Mapping Grid

Section I

Question	Marks	Content	Syllabus outcomes
1	1	9.3 Modem	H1.1
2	1	9.1 Gantt chart	H7.2
3	1	9.3 Mail server	H1.1
4	1	9.3 Communication media	H1.1
5	1	9.1 Implementation plan	H7.1
6	1	9.2 Information processes	H2.1
7	1	9.1 Requirements prototype	H6.2
8	1	9.2 Text search	H1.1
9	1	9.1 System testing	H6.2
10	1	9.3 Gateway	H1.1
11	1	9.2 Databases – primary key	H2.2
12	1	9.2 Databases – relationships	H2.2
13	1	9.3 Network operating software	H1.1
14	1	9.3 Communication framework	H1.1
15	1	9.1 Development approach	H6.2
16	1	9.3 Parity	H1.1
17	1	9.1 Dataflow diagram	H7.1
18	1	9.1 Testing, evaluating and maintaining	H6.2
19	1	9.3 Protocols	H1.1
20	1	9.2 Sorting	H1.1

Section II

Question	Marks	Content	Syllabus outcomes
21 (a)	2	9.2 Data redundancy	H1.1
21 (b) (i)	3	9.2 Data type and field size	H1.1, H1.2
21 (b) (ii)	2	9.2 Calculation of a table size	H1.1
21 (b) (iii)	3	9.2 SQL	H1.1
22 (a)	2	9.3 Email	H3.1
22 (b)	3	9.1 Social and ethical issues	H3.1
22 (c)	3	9.1 Conversion methods	H1.1, H1.2
22 (d)	3	9.1 Decision tree	H7.2
23 (a)	3	9.3 Network topologies	H1.1, H1.2
23 (b)	3	9.3 Transmission media	H1.1, H1.2
23 (c)	4	9.3 Internet, intranet and extranet	H1.1, H1.2
24 (a)	4	9.1 Feasibility	H6.1

Question	Marks	Content	Syllabus outcomes
24 (b)	5	9.2 Information system in context	H1.2

Section III

Question	Marks	Content	Syllabus outcomes
25 (a)	3	9.4.1 Realtime processing	H1.1, H1.2
25 (b)	3	9.4.1 Storage media for backup	H1.1, H1.2
25 (c)	4	9.4.1 Screen design for web-based form	H1.1, H1.2
25 (d)	4	9.4.1 RFID	H1.1, H3.1
25 (e)	6	9.4.1 Data warehousing	H1.1, H1.2, H3.1
26 (a)	3	9.4.2 What-if models	H1.1, H1.2
26 (b)	3	9.4.2 Semistructured and unstructured	H1.1, H1.2
26 (c)	4	9.4.2 Group decision support systems	H1.1, H1.2, H3.1
26 (d)	4	9.4.2 Geographic information systems	H1.1, H1.2
26 (e)	6	9.4.2 Expert systems and neural networks	H1.1, H1.2, H4.1
27 (a)	3	9.4.3 Discrete processing	H1.1, H1.2
27 (b)	3	9.4.3 CAD/CAM	H1.1, H1.2
27 (c)	4	9.4.3 Benefits of AMS	H3.1
27 (d)	4	9.4.3 Noise	H1.1, H1.2
27 (e)	6	9.4.3 Technologies for an AMS	H1.1, 1.2
28 (a)	3	9.4.4 Virtual reality in entertainment	H1.1, H3.1
28 (b)	3	9.4.4 Software for video and animation	H1.1, H1.2
28 (c)	4	9.4.4 Sampling rate	H1.1, H1.2
28 (d)	4	9.4.4 Roles of experts	H1.1, H1.2
28 (e)	6	9.4.4 Analysing an MMS	H1.1, H3.1, H3.2