



Computing: Informatics

Practice Exam Solutions

Stop!

Don't look at these solutions until you have attempted the exam.

Any questions?

Check the Engage website for updated solutions, then email practiceexams@ee.org.au.

Section A – Multiple-choice questions

Question 1

The correct answer is C.

A only refers to the completion whilst B is not a user flow diagram item.

Question 2

The correct answer is C.

A, B and D are all design principles.

Question 3

The correct answer is D.

A Primary key identifies a key field – it is not a data type.

Question 4

The correct answer is C.

Encryption does not prevent data from being copied – but does prevent it from being identified.

Encryption has no connection to communication ports

Encryption has no part in data recovery.

Question 5

The correct answer is B.

RDBMS are used to store and access data – not for checking compliancy of companies.

Question 6

The correct answer is D.

An ERD is designed to show relationships between tables and individual fields.

Question 7

The correct answer is B.

A hypothesis has both an independent and a dependent variable (that will change if the independent variable is altered).

Question 8

The correct answer is C.

Constraints include any factors that may have a minimising impact on a hypothesis.

Question 9

The correct answer is D.

Quantitative data can be used to measure factors involved in an ongoing issue.

Question 10

The correct answer is A.

Observation allows investigator to watch respondents as they act. All other answers are not true of observation.

Question 11

The correct answer is D.

A refers to Timeliness of data, B refers to Authenticity and C refers to Completeness.

Question 12

The correct answer is A.

The Privacy and Data Protection Act 2014 relates to Vic Govt operatives such as schools. It does not relate to SA, NSW or federal groups.

Question 13

The correct answer is B.

Interview Analysis is not a GANTT chart item so excludes A, C and D.

Question 14

The correct answer is A.

Choosing a type of Date method is known as a Format.

Question 15

The correct answer is A.

The use of muted or less bright colours does not distract the reader from key elements of the page. Bright colours and many of them, can become confusing and distracting.

Question 16

The correct answer is C.

IPO charts identify the necessary input and output of data along with an intermediary algorithm that is needed to convert the input data into the output.

Question 17

The correct answer is C.

The project will take 5 days to complete – no days can be saved .

Question 18

The correct answer is D.

Dig Trench is a predecessor – not to be confused with Add Pipes which would be the Successor.

Question 19

The correct answer is B.

Ransomware (along with spyware and malware) is a technical threat.

Question 20

The correct answer is B.

All DRP's should have inbuilt testing stages along with written reports to identify the success/issues that occur during the testing phase for future reference.

Section B – Short-answer questions**Question 1a**

A flat file has only one table whilst a RDBMS has multiple tables with identified relationships between the tables.

Question 1b

An ERD is used to establish the inter-relationships b/w different data elements and how they relate to each other in a diagram format.

Question 2a

In the Design stage

Question 2b

Variety of answers is possible. Looking for the 2 marks to show an answer that identifies a formula or function to test such as:

- number of hamburgers
- cost of different types of hamburgers
- adding multiple costs together
- multi option boxes to let user add many condiments etc
- testing any buttons on web page that do addition, confirmation of order, confirmation of payment etc

and then matching the test data to the function identified

Question 3

Any 2 of the following:

- separating the first and surnames of the members so that sorting by surname is possible
- separating the address into Address1, Suburb, Postcode to allow searching and sorting.
- Changing the ID to more meaningful names such as 1 becomes VINR001

Question 4a

Encryption is the process of translating plain text data (plaintext) into something that appears to be random and meaningless (ciphertext). In order for it to be made meaningful it needs to be decrypted with a password or code.

It is useful for Margarita b/c it means that any time her clients enter data into her website it would be automatically encrypted and therefore even if someone else was able to access her files they could not read the data or make use of it.

Question 4b

[3] – 1 per any of the items described below and related to music website

- Open and transparent management of personal information
- Anonymity and pseudonymity
- Collection of solicited personal information
- Dealing with unsolicited personal information
- Notification of the collection of personal information
- Use or disclosure of personal information
- Direct marketing
- Cross-border disclosure of personal information
- Adoption, use or disclosure of government related identifiers
- Quality of personal information
- Security of personal information
- Access to personal information
- Correction of personal information

Question 5a

Any two of the following Physical security controls:

- locked door – only people with a key can gain entry
- swipe cards – better than keys, as it is possible to allocate certain times of the day when a particular card can have access; lost cards can easily be disabled
- bars on windows – intruders cannot get through
- security cameras – act as a deterrent to an intruder
- finger/hand/retina scanner – stops anyone who has not been given access gaining access to the server room.

Question 5b

Any two of the following software security controls include:

- usernames and passwords – restricts access to only those who have been given a username and password; can also restrict user access based on the usernames and password
- firewall – stops intruders who are trying to access the server via the internet
- antivirus software – stops virus from gaining access to the server and deleting or copying files
- encryption – prevents unauthorised users who access the files from reading the content.

Question 5c

Type of Threat	Issue	Recommended action
Accidental	Coffee spill onto laptop	3. Ensure that all data that is entered onto company laptops is also backed up onto server. This will allow all data to be restored to old laptop if recoverable or new replacement laptop.
1. Technical	Spyware	4. All company laptops and other computer based devices carry antivirus and anti-malware software that is updated daily to prevent downloading of Spyware.
Deliberate	Disgruntled worker deletes files from database	5. Ensure that all data that is entered onto company computers is also backed up onto server. This will allow all deleted files to be restored.
2. Event-based	Lightning storm causes power outage to suburb	6. Data can be restored from backups on server. Use of UPS devices can minimise damage to servers and computers to prevent costly replacements.

Question 6a

The data type for the transactions field have been set to text [1].

This means that upon sorting all transactions will be sorted alphabetically so that the order will be 1, 10, 11, 12 before progressing to 2, 3 and so on [1].

Question 6b

Carmel should change the data type of the field transaction to number. Instead of entering the description Transaction1 she could just have it autonumber so that as each transaction is created it automatically increments by one. This will allow files to be sorted by number [2].

*** An alternate acceptable answer would be to leave the data type as text and change the format of the text to Transaction001, 002 etc which would also allow sorting to occur.*

After the changes have been made, Carmel should test the sorting and view it to ensure it works as intended [1].

Question 7a

Makes data easier to identify and simple to digest – particularly useful with large data sets and complex data.

Question 7b

Can make groups of data eg all scores above 90% very easy to identify, without having to manipulate data.

Question 7c

Makes data easy to reorganise data sets and reveal significant patterns without changing the underlying structure of your data.

Section C – Short-answer questions

Question 1a

That as the number of students who have selected Australian Rules as their Prime Winter Sport has decreased so has their level of success in external school competitions.

Question 1b

Students who have selected Australian Rules as their Prime Winter Sport

Question 1c

Level of success in external school competitions

Question 2a

Answers need to be related to the orig topic that as the number of students who have selected Australian Rules as their Prime Winter Sport has decreased so has their level of success in external school competitions. Include

- Direct observation
- Group discussions
- Interviews
- Statistics from Online groups such as ABS

Answer needs to indicate that data is Primary

Question 2b

Answer needs to indicate that data is Secondary.

- Newspaper reports
- Online reports
- Online forums

Question 2c

Answer needs to indicate that data is Qualitative ie is based on views, discussions, thoughts of others. Also needs to be related to orig topic ie that as the number of students who have selected Australian Rules as their Prime Winter Sport has decreased so has their level of success in external school competitions

Question 2d

Answer needs to indicate that data is Quantitative ie is based on numerical evidence that has been measured eg Statistics covering similar or related topics such as:

- What other sports are students moving to?
- How many students are no longer playing any sports and have taken up different interests?
- Has the school culture changed?
- Has the suburb culture changed?

Question 2e

Qualitative Adv's:

- Can give more detailed information
- Can give holistic approach
- Can help inform policy creation

- Can help delve into moral/ethical issues

Qualitative Disadv's:

- Can be time consuming to collect
- Data generally needs to be encoded to be analysed
- Information is generally subjective
- Difficult to compare with historical data

Question 3a

Student privacy is likely to be breached. Students should give written permission for their names and details and answers etc to be released for others to read.

Question 3b

The Privacy Act 1988

Question 3c

A legal issue is something that can be legally enforced and can carry legal penalties.

An ethical issue is one that is based on the belief that people should carry out certain actions based on a moral imperative eg that we should respect our elders. It is not enforceable by law but most people believe in it and try to carry it out.

Question 3d

Don can either

- ensure all data is anonymous so that there is no indication of who made the indiv responses or
- gain permission from every person who contributes to the survey, to allow Don to publish their information and details.

Question 4a

Answers should indicate that the students' names need to be either

- converted into ID's that cannot be recognised or
- completely anonymised so that there is no record of who entered the data. This can be achieved by not having students entering their personal details after gaining access to survey.

Question 4b

Answers should have a combination of letters and digits to show some relationship to the students surname and possibly first name eg John Smith might become SMJ0001.

Question 4c

- Uninterrupted accessibility of online facilities allows for clients to supply information when it is convenient for them. This reduces the time it takes for the organisation to access the data being supplied, as they are getting it straight away.
- It also increases the chances of the data being correct if the user is entering the data themselves, as there is no double handling of data.
- Reduced costs as no staff required for data entry, manipulation

Question 4d

[2] if the answer indicates

- 2 different back storages eg one onsite and easily accessible as well as a cloud or offsite solution.

- Data to be backed up at least once daily.

Question 4e

Incremental = a backup of new or changed data since the last data backup process – it is specifically targeting changes to previous files and data [1].

It is much quicker than a full backup, so can be performed in conjunction with a full backup eg company has a full backup once per week and a daily incremental backup each day that records daily changes to files [1].

Question 4f

[1] for explanation of each of the DRP features:

Evacuation – roles and responsibilities of staff in relation to staff evac and collection of files and data

Data backup – identify all data that is important to Don and processes for full backup.

Data restoration – who will be responsible for restoring data and timeline and processes for restoration of data.

Testing of DRP – regular testing of all DRP processes including evacuation and data restoration.

Question 4g

[1] for explanation of any of following:

Written document with all procedures outlined

Create false dummy documents and delete them. Then have them restored a few days later. Were they able to be retrieved and were they accurate?

On monthly basis restore random selection of files and data from database. Compare for completion of all files and for accuracy.

Evacuation drill to see if staff know their roles and responsibilities

Collection of feedback from staff after evacuation is run.

Question 5a

Range of possible answers including:

Check boxes with multiple possible options

Listbox with range of set answers

Drop-down list box

Combo box

[1] for correct answer and [1] for explanation of validation method

Question 5b

Input mask. Students could put _ _ _ _ or the more correct answer would be 3 _ _ _ as all postcodes will begin with a 3 for Victoria.

Range validation should not be accepted as postcodes are not used for calculations.

Question 5c

Range of possible answers – some eg's shown below:

Field	Test Data	Explanation
Surname:	Include surname with numbers eg Smit123h	Test designed to ensure data is limited to letters and apostrophes etc – not digits as Surnames do not have numbers in them
Email address	Include email with another symbol to replace '@' eg harry%hello.com.au	All email address use the '@' symbol so create formula that mandates it.
Age	Enter age with decimal 15.45 value Or Enter text instead of number	Limit to positive integers only. Or Ensure that text cannot be entered

Question 5d

Primary Key = uniquely identifies each record in table.

Foreign Key = when a Primary Key is used in another table

Question 5e

Input Mask = a control applied to how data is entered – can be set to accept a specific set of digits, dates or characters.

In this case user would be restricted to only enter digits in following 8 spots:

__ / __ / ____

Question 5f

GANTT chart evaluation criteria:

- Was project completed on time?
- Is Don satisfied with the database?
- Were all tasks completed?
- Was the project completed within budget?

Each item should be related to the database. 2 items to be covered in answer.

Question 6a

Functionality principles include useability, flexibility and ease of use, and accessibility.

- Useability refers to the solution capabilities being used, including robustness. The solution needs to be available on a number of different platforms such as iPad, PC, mobile phones.
- Flexibility and ease of use refers to catering for a wide range of abilities, and allowing for tasks to be completed in a number of different ways.
- Accessibility means the solution is available to a wide range of users in different locations, of different abilities and genders, and from different cultural backgrounds. Questions should be designed to allow for these differences in the various users without offending them

Question 6b

Design principles include alignment, repetition, contrast, space and balance.

- Alignment refers to how everything on a page aligns, making it easier for the human eye to read and comprehend. On a web page, all data entry fields should be left aligned so that it is easy to see and enter data.
- Repetition refers to the ability to have unified elements of a layout. Repeated page elements and patterns help to make pages look similar.
- Contrast refers to being strikingly different to other nearby aspects (i.e. text is a contrasting colour to the background).
- Space is the area that separates the objects and text on the screen or page. Objects are spaced so that they can be easily seen and understood.
- Balance refers to the visual weight that all elements have on the screen or page. There should be equal-sized elements on the top and bottom of the page or on the sides.

Question 6c

Include a feedback form near the end of the online form. 1 mark

It is an important addition as it provides Don and his team with a range of information re their site. This may include

- issues with students entering data eg they may not be able to add in a specific music interest that was omitted by accident or
- suggestions for additions to the site for the future.
- [1] for plausible reason