

Question 6

(3 marks)

Use the following spreadsheet to answer this question.

	A	B	C	D	E	
1		Section 1	Section 2	Section 3	Total	
2	James	10	19	44	73	
3	Khang	14	26	36	76	
4	Sharyn	8	12	26	46	
5	Mohammed	12	25	35	72	
6	Peter	6	12	24	42	
7						
8	Average	10	18.8	33	61.8	
9	Number of students who scored > 65%				?	
10	Highest score on each test	?	?	?		
11						

a) Write the formula to calculate the **average** in cell B8. (1 mark)

Description	Marks
MUST have both the FUNCTION NAME (AVERAGE) and the range value (B2:B6) Indicated with correct syntax or equivalent expression. If Excel wouldn't accept it, then it gets no marks. Missing equals sign (=) is acceptable.	1
Total	1
A response worthy of full marks should include: = AVERAGE(B2:B6) or (B1+B2+B3+B4+B5+B6) / 5	
*Accept other responses that evaluate to the correct answer but do not use the function	

b) Write the formula in E9 to calculate the number of students who scored more than 65%. (1 mark)

Description	Marks
MUST have both the FUNCTION NAME (COUNTIF) and the range value (E2:E6) Indicated with correct syntax. If Excel wouldn't accept it, then it gets no marks. Missing equals sign (=) is acceptable, "" required.	1
Total	1
A response worthy of full marks should include: = COUNTIF(E2:E6, ">65")	
DO NOT Accept other responses	

c) Write the formula in D10 to find the highest score on Section 3 (1 mark)

Description	Marks
MUST have both the FUNCTION NAME (MAX) and the range value (D2:D6) Indicated with correct syntax. If Excel wouldn't accept it, then it gets no marks. Missing equals sign (=) is acceptable.	1
A response worthy of full marks should include: = MAX(D2:D6)	1
Total	1
DO NOT Accept other responses	

b) Update Anomaly

(2 marks)

Description	Marks
Accurately and in some detail, highlights that, when multiple (redundant) instances of a data item are stored, then unless these are ALL updated to the new value simultaneously, then inconsistent and inaccurate data will be stored about an entity.	2
Makes passing reference problems created when updating data, but response lacks the detail referring to redundancy and the resultant need to update all instances simultaneously etc	1
Total	2
Accept other relevant responses conveying similar meaning	

Question 14

(8 marks)

Given an un-normalised table of data, outline the “rules” that must be satisfied to achieve each successive form of normalisation:

0NF → 1NF:

(4 marks)

Description	Marks
The order of the following is unimportant...	
- for each record, the values stored in each attribute must be atomic	1
- each attribute name in a table must be unique	1
- there can be no repeating groups/fields of data eg. phone1, phone2, car 1, car2	1
- each row/record must be uniquely identifiable through the identification of a Primary Key. (A Primary Key may be a Composite Key using multiple fields to create uniqueness). [*creating new ID fields should be avoided at all costs here*]	1
Total	4
Accept other relevant responses that identify the same 4 principles/rules	

1NF → 2NF:

(2 marks)

Description	Marks
- table MUST already be in 1NF	1
- every non-key attribute MUST be dependent on the WHOLE of the Primary Key (Note: if the PK is not Composite, then the 1NF table is automatically in 2NF)	1
Total	2
Accept other relevant responses that identify the same 2 principles	

2NF → 3NF:

(2 marks)

Description	Marks
- table MUST already be in 2NF	1
- there must be no “transitive dependencies” where a non-key field depends on another non-key field instead of the Primary Key.	1
Total	2
Note: <ul style="list-style-type: none"> For all of the above, it is important that the student demonstrates understanding of the concept of “dependency”. This is where the value of one attribute in a row can always be predicted by knowing the value of the other (dependent) attribute. 	
Accept other relevant responses that identify the same 2 principles	

Question 15

(2 marks)

With respect to relational databases, define each of the following terms.

a) Primary Key

(1 mark)

Description	Marks
Conveys understanding that the value of a PK uniquely identifies each record in the table.	1
Total	1
Accept other relevant responses that convey the same meaning	

b) Foreign Key

(1 mark)

Description	Marks
Conveys understanding that the value of the FK MUST be a value that exists in the PK of the related table, providing the basis for creating a relationship between two tables.	1
Total	1
Accept other relevant responses that convey the same meaning	

Question 16

(6 marks)

Discuss **three** *physical* preventative maintenance/security measures you could recommend to an organisation to help keep their client & server equipment operational.

Description	Marks
- environmental controls (temperature, humidity, dust, lighting etc)	1 – 2
- secure access (locked doors/buildings/security passes) - NOT passwords but BIO measures involving physical traits/interactions are OK.	1 – 2
- physical disabling/removal of removable media access (USB port, CD ROM etc)	1 – 2
Total	6
<p>A response worthy of full marks should include:</p> <ul style="list-style-type: none"> for each of the three measures offered, an illustrative example or additional detail pertaining to how it aids ongoing operational availability of the client/server equipment is necessary. The question asks candidates to discuss, not simply list, so a simple statement “locked doors” is only worth 1 mark 	
Accept other relevant responses	

Question 17

(4 marks)

Describe the role of each of the following **two** components of a computer's CPU.

a) Control Unit

(2 marks)

Description	Marks
Describes the ROLE of the CU, which involves telling the ALU, memory (registers, cache, RAM etc) and I/O devices how to respond to each specific machine instruction that is loaded into the CPU, keeping each action synchronised with ticks of the system clock (GHz speed).	2
Simply DEFINES the term (it is part of the CPU), rather than its role, which is specifically what the question asked for.	1
Total	2
Accept other relevant responses that convey the same meaning	

b) Register

(2 marks)

Description	Marks
Describes their ROLE , which is to hold data, memory addresses and processed results that are involved in the current, previous or following CPU instructions.	2
Simply DEFINES the term (a few, ultra-fast memory locations directly attached to the CPU), rather than their role, which is specifically what the question asked for.	1
Total	2
Accept other relevant responses that convey the same meaning	

Question 18

(2 marks)

The following is an example of a trouble-shooting procedure an end-user could use for a suspected faulty USB connected device.

1. Check USB connector
2. Plug into different USB port
3. Try a different USB device of the same type
4. Try the suspected faulty USB device on a different computer
5. Check software
6. Call Help desk

In a similar way, document a trouble-shooting procedure an end-user might use if it appears that their computer does not boot up and the screen remains blank.

Description	Marks
Includes at least 4-6 steps that indicate a logical sequence of events/questions, characterised by some form of binary decision-making which is the foundation of Root Cause Analysis (RCA).	2
Simplistic 2-3 steps more characteristic of "trial and error" approach rather than systematic RCA.	1
A response worthy of full marks should include: <ul style="list-style-type: none"> • Check if wall power is ON to both devices. If not, switch on. • Check if any LEDs illuminated. If not... • Check if switches on equipment are turned on. • If no, switch hardware buttons on. • Check if any LEDs illuminated. If only one... • Substitute another device of the same type • If still no positive outcome, call Help Desk. 	
Total	2
Accept other relevant responses that convey the same meaning	

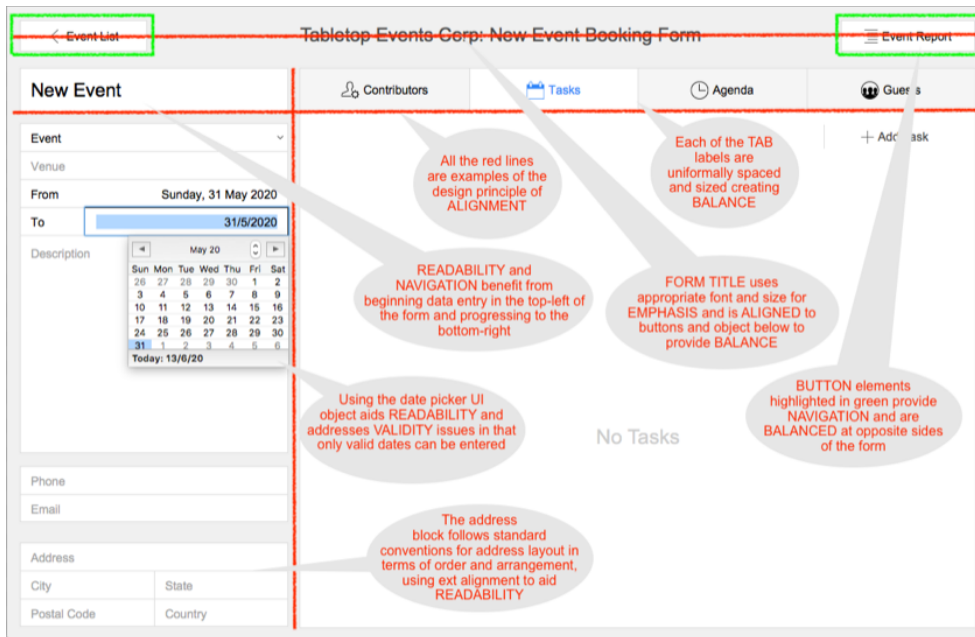
End of Section One

Question 21

(15 marks)

Refer to PART B of the source booklet to answer all parts of questions 21 – 23.

Tabletop Events Corporation have begun planning their new database application. You have been tasked with developing the user interface (UI) for the main “Bookings Form” that will be used by staff to enter details into the computer when clients call up on the phone. In the space provided, design a suitable UI that demonstrates your knowledge and application of visual design principles. Annotate your design to highlight the principles that you have used and why, from the point of view making the interface more intuitive to use and better at communicating the information being displayed.



Description	Marks
Data entry order follows convention and generally progresses L-R & Top-Bottom	1
Use of FONT size to draw attention and add EMPHASIS aiding readability	1
At least one ANNOTATED (1) example demonstrating BALANCE (1)	1 – 2
At least one ANNOTATED (1) example demonstrating PROXIMITY (1)	1 – 2
At least one ANNOTATED (1) example demonstrating ALIGNMENT (1)	1 – 2
Includes examples of different navigation methods/objects (tabs, buttons etc)	1 – 2
Includes title of form indicating it is the “Bookings Form” or similar	1
Includes appropriate fields to capture basic requirements of a new booking. Name of event/booking (1), date(1), venue (1), contact details of hirer(1)	1 – 4
Total	15
Accept other relevant responses conveying similar meaning	

Question 22

(16 marks)

Refer to the image of **Worksheet One** in the source booklet to answer the following:

- a) Describe the issues associated with using a spreadsheet instead of a database to create invoices for the business such as the one depicted in the worksheet. (4 marks)

Description	Marks
Detailed description of two or more issues	3 – 4
Superficial description of two issues or detailed description of a single issue	2
Superficial description of a single issue	1
Total	4
A response worthy of full marks should include: <ul style="list-style-type: none"> reference to the over-riding issue that spreadsheets, at best, support the concept of a “flat-file”, representing a <i>system as a single entity</i>, when this is rarely ever the case. the result of this issue, is that because relationships are not supported, data redundancy results with potential, associated loss of data integrity as the system is used unless much care is taken to manually maintain the system as data is added, updated or deleted. with specific reference to the INVOICE, these issues are revealed: <ul style="list-style-type: none"> - each of the fields comprising the catering line items would need repeating for each line item, then requiring repetition of the other fields on the form (date, client address, invoice number etc) - if Tabletop Events moved from ABC Road in Perth, all other invoices would need to be updated to reflect this change Accept other relevant responses conveying similar meaning	

- b) This invoice has a number of calculations using different formulas and functions. Write the most efficient formulas and functions for the following cells. (8 marks)

Description	Marks
For each of (i) →(iv)	
Correctly executable expression, with or without equals sign	2
Logically, but not syntactically correct	1
Total	8
A response worthy of full marks should include: <ul style="list-style-type: none"> i) C21: = SUM (C11:C20) ii) C23: = C22 *C21 iii) C25: = C21 + C23 + C24 [Can't be SUM(C21:C24) due to GST rate in C22] iv) C11: = VLOOKUP(A11,Lookup!A2:C6,3,FALSE)*C8 Accept other relevant responses conveying similar meaning	

- c) The database administrator has stated that when the information represented on the invoice is represented as a table, some of the fields may not be *atomic*. Using your understanding of the term *atomicity*, identify **one non-atomic** field from the invoice and describe what is required in order for this to be fixed. (4 marks)

Description	Marks
Highly detailed description of what is required	3 – 4
Detailed description of what is required	2
Limited description of what is required	1
Total	4
A response worthy of full marks should include: <p>Atomicity is the use of a single piece of data in a field. CateringAddress is a non-atomic field as it combines all parts of an address. It should be broken down into Street No, Street name, Suburb, Postcode, State, Country in order for it to be completely atomic.</p> Answers may discuss more than one contact number etc. Accept other relevant responses conveying similar meaning	

Question 23

(25 marks)

Refer to all the information provided in **Part B of the source booklet** to answer the following:

- a) In the space below, use Chen’s notation to create an ER Diagram for the Tabletop Events database system ensuring you resolve any many to many relationships. Indicate and name Primary keys, Foreign keys, cardinality and relationships. (10 marks)

Description	Marks
Entities – Client, Booking and Catering (1 mark for each)	1-3
Cardinality – 1:M and M:1 (1 mark for each)	1-2
Primary keys – ClientUserName, BookingID and CateringID	1-3
Foreign keys – ClientUserName, CateringID	1-2
Total	10
<p>A response worthy of full marks should include:</p> <pre> erDiagram Client --o{ Booking : makes Booking --o{ Catering : has ClientUserName ..o Booking : "ClientUserName FK" CateringID ..o Booking : "CateringID FK" </pre>	
Accept other relevant responses conveying similar meaning	

- b) Tabletop Events have had some issues with the security of their database. Previously they have been told not to worry as “why would anyone bother to hack into their system?” You disagree and justify your position through responding to the following issues:

- i) Give **two** reasons that Tabletop’s system is worth hacking and describe each. (6 marks)

Description	Marks
For each of the TWO reasons:	
Describes the reason for the motivation to hack in some detail	2
Names/identifies a reason	1
Total	4
<p>A response worthy of full marks should include:</p> <ul style="list-style-type: none"> the data base is likely to contain the private details of clients, staff and guests – particularly contact information. These details are the foundation of identity theft. - hackers may also on-sell this data to others who may be in the events industry (competitors) or who supply event services (marketing/spam) as payments are required by clients and by the business for the supply of services, so financial details may be stored and if accessed, lead to bank fraud. 	
Accept other relevant responses conveying similar meaning	

Question 23 (continued)

Further, as a result of the potential security vulnerabilities of Tabletop’s systems, you feel you need to make them aware of the legal and ethical risks associated with *collecting*, *storing* and *using* people’s information in light of Australia’s Privacy Principles laws.

ii) Describe **one** legal requirement regarding the **collection** of information for Australian citizens that organisations must follow. (3 marks)

Description	Marks
Highly detailed description of the legal requirements for the collection of data	3
Detailed description of the legal requirements for the collection	2
Limited description of the legal requirements for the collection	1
Total	3
A response worthy of full marks should include: <ul style="list-style-type: none"> an organisation may only solicit and collect personal information that is reasonably necessary for one or more of its functions or activities in addition to the above requirements, they may only solicit and collect sensitive information if the individual consents to the sensitive information being collected, unless an exception applies by way of a government agency. 	
Accept other relevant responses conveying similar meaning	

iii) Describe **one** legal requirement regarding the **storage** of information for Australian citizens that organisations must follow. (3 marks)

Description	Marks
Highly detailed description of the legal requirements for the storage of data	3
Detailed description of the legal requirements for the collection	2
Limited description of the legal requirements for the collection	1
Total	3
A response worthy of full marks should include: Once the information has been collected an organisation should design personal information security measures with the aim to: <ul style="list-style-type: none"> prevent the misuse, interference, loss or unauthorised accessing, modification or disclosure of personal information detect privacy breaches promptly be ready to respond to potential privacy breaches in a timely and appropriate manner 	
Accept other relevant responses conveying similar meaning	

iv) Describe **one** legal requirement regarding the **use** of information for Australian citizens that organisations must follow. (3 marks)

Description	Marks
Highly detailed description of the legal requirements for the use of data	3
Detailed description of the legal requirements for the collection	2
Limited description of the legal requirements for the collection	1
Total	3
A response worthy of full marks should include: <ul style="list-style-type: none"> An organisation must take reasonable steps to protect personal information it holds from misuse, interference and loss, as well as unauthorised access, modification or disclosure. Where an APP entity no longer needs personal information for any purpose for which the information may be used or disclosed under the APPs, the entity must take reasonable steps to destroy the information or ensure that it is de-identified. 	
Accept other relevant responses conveying similar meaning	

END OF EXAM