*EDWEST*

## Western Australian Certificate of Education

**Semester 2 Examination Marking Guide, 2018**

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**COMPUTER SCIENCE**

**Unit 1 and 2: Year 11 ATAR**

**Structure of this paper**

**Section One: Short answer** **40% (86 Marks)**

**Question 1 (4 marks)**

There are a number of types of system development methodologies including prototyping and the system development life cycle (SDLC).

1. Outline **two** advantages of using the SDLC methodology. (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clearly outlines two advantages of using the SDLC methodology | 2 |
| Limited outline of two advantages or clear outline of one advantage | 1 |
| Total | 2 |
| An example answer could be:  There are a number of advantages including: 1. Clear project objectives. 2. Stable project requirements. 3. Progress of system is measurable. 4. Strict sign-off requirements.  Accept other reasonable answers |  |

1. Outline two disadvantages of using the SDLC methodology. (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clearly outlines two disadvantages of using the SDLC methodology | 2 |
| Limited outline of two disadvantages or clear outline of one advantage | 1 |
| Total | 2 |
| An example answer could be:  There are a number of disadvantages including:  1. Time consuming 2. Never backward (Traditional) 3. Little room for iteration 4. Difficulty responding to changes  Accept other reasonable answers |  |

**Question 2 (6 marks)**

Describe the following stages of the system development life cycle and name an activity in each.

1. Analysis (3 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear description of the analysis stage of the SDLC | 2 |
| Limited description of the analysis stage of the SDLC | 1 |
| An accurate activity named for this stage | 1 |
| Total | 3 |
| An example answer could be:  Analysis is the stage where the collection of factual data takes place. Understanding the processes, identifying the problem and recommending solutions.  An activity could include – interviewing users, creating DFD’s etc. of current system.  Accept reasonable answers. |  |

1. Implementation (3 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear description of the implementation stage of the SDLC | 2 |
| Limited description of the implementation stage of the SDLC | 1 |
| An accurate activity named for this stage | 1 |
| Total | 3 |
| An example answer could be:  The implementation stage is when the system becomes a reality.  The major activities involved in this stage are:   * Acquisition and Installation of Hardware and Software * Conversion * User Training * Documentation   Accept reasonable answers |  |

**Question 3 (2 marks)**

Use the spreadsheet below to answer the following questions:

1. Write the formula that would be used in cell D24. (1 mark)

|  |  |
| --- | --- |
| Description | Mark |
| Answer is =D14-D22 | 1 |
| Total | 1 |

1. Write the formula that would be used in cell B14. (1 mark)

|  |  |
| --- | --- |
| Description | Mark |
| Answer is =B3+B7 | 1 |
| Total | 1 |

**Question 4 (3 marks)**

Explain the boot process, including POST.

|  |  |
| --- | --- |
| Description | Mark |
| Detailed explanation of boot process with POST included | 3 |
| Explanation of the boot process with some aspects missing | 2 |
| Limited explanation of boot process | 1 |
| Total | 3 |
| An example answer could be:  The boot process is a startup sequence that starts the operating system of a computer when it is turned on. A boot sequence is the initial set of operations that the computer performs when it is switched on. POST (power on self test) runs at the beginning of the boot sequence before OS is loaded. It checks for vital H/W components, if there is a problem an error message will display.  Accept reasonable answers. |  |

**Question 5 (6 marks)**

Use the following scenario to create an accurate Context Diagram.

LIM fashions is a boutique clothing store situated in the city. The following outlines their Customer sales system. A customer decides to purchase a number of garments and gives these to the cashier. The cashier totals these and asks for the total amount. The customer gives their credit card details. Once paid the cashier gives the customer a receipt. Once the transaction is complete the information is sent to Head Office.

|  |  |
| --- | --- |
| Description | Mark |
| System named correctly in central circle | 1 |
| Entities named correctly in rectangles (Customer and Head Office – 1 mark each) | 1-2 |
| Data flows from customer to system labelled correctly | 1 |
| Data flows to customer from system labelled correctly | 1 |
| Data flow to Head office labelled correctly | 1 |
| Total | 6 |
| An example answer could be:    Flow names may vary but need to be logical and in the context of the case study. |  |

**Question 6 (6 marks)**

Explain the process of the fetch-execute cycle and include the role of the arithmetic logic unit (ALU), program counter and registers.

|  |  |
| --- | --- |
| Description | Mark |
| Detailed explanation of the process | 3 |
| Clear explanation of the process | 2 |
| Limited explanation of the process | 1 |
| Detailed explanation of the role of the 3 components | 3 |
| Clear explanation of the role of the 3 components | 2 |
| Limited explanation of the role of the 3 components | 1 |
| Total | 6 |
| An example answer could be: The fetch execute cycle includes:  1. The CPU checks the program counter to see which instruction to run next. 2. The program counter gives an address value in the memory of where the next instruction is. 3. The processor **fetches** the instruction value from this memory location. 4. Once the instruction has been fetched, it needs to be **decoded** and **executed**. By putting the value into the ALU, then taking a different value from a register and adding the two together and **storing** result into register. 5. Once this is complete, the processor goes back to the program counter to find the next instruction. 6. This cycle is repeated until the program ends.   Accept other reasonable answers |  |

**Question 7 (4 marks)**

Outline the following database terms with an example.:

1. relation (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear outline of a relation | 1 |
| An accurate example | 1 |
| Total | 2 |
| An example answer could be:  A relation is another name for a table or entity. It is made up of a group of related records or tuples. EG: a customer relation would likely include name, address, phone and a primary key that uniquely identifies the record. |  |

1. Record (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear outline of a record | 1 |
| An accurate example | 1 |
| Total | 2 |
| An example answer could be:  A record is another name for a tuple. It is made up of related fields or attributes. EG: a record would include data related to the primary key, such as Joe, Bloggs, 34 Fix Street, Perth, WA, 6000, ID001 |  |

**Question 8 (6 marks)**

There is an issue with the entity relationship diagram (ERD) below. Resolve the issue and draw an updated diagram. Include any primary and foreign keys that are required.

|  |  |
| --- | --- |
| Description | Mark |
| Correct placement and naming of cardinality from Room and Guest to associative entity | 1-2 |
| Correct creation of associative entity – room/guest | 1 |
| Accurate naming of primary and foreign keys for associative entity | 1-2 |
| Accurate placement for Room and Guest entities with primary keys | 1 |
| Total | 6 |
| An example answer could be:    Note: Room and Guest entities were given in question therefore no extra marks are awarded for this. |  |

**Question 9 (4 marks)**

Outline **two** legal issues that relate to the personal use and storage of data.

|  |  |
| --- | --- |
| Description | Mark |
| Clear outline of one legal issue | 2 |
| Limited outline of one legal issue | 1 |
| Clear outline of one legal issue | 2 |
| Limited outline of one legal issue | 1 |
| Total | 4 |
| An example answer could be:  Businesses must ensure they follow the Privacy act 1988 which covers 13 principals.  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.  Once the information has been collected an organisation should design personal information security measures. Australia now requires companies with turnover of >3 million to report all data breaches.  Answers should relate to the principles of the use and storage of data.  Answers may also refer to the Privacy and data protection act 2014. |  |

**Question 10 (2 marks)**

Outline the difference between primary and secondary storage.

|  |  |
| --- | --- |
| Description | Mark |
| Clear outline of the difference between primary and secondary storage | 2 |
| Limited outline of the difference | 1 |
| Total | 2 |
| An example answer could be:  There are a number of differences between primary and secondary however the main difference is that primary memory is the main memory (RAM) where the operating system resides as well as Cache and ROM. Secondary memory can be external devices like CD, floppy magnetic discs etc. Secondary storage cannot be directly accessed by the CPU.  Answers may state that primary is volatile. This is not the case for ROM and answers should be specific is they refer to this. |  |

**Question 11 (4 marks)**

Describe the purpose of the following utility software.

1. Defragmenter (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear description of the purpose of a defragmentor | 2 |
| Limited description of the purpose | 1 |
| Total | 2 |
| An example answer could be:  Defragmentor rearranges the layout of files on your hard disk for faster access. Specifically, when (or even if) you need to do it at all is evolving. “Defragging” is short for “de-fragmenting” and it's a process run on most hard drives to help make accessing the files on that disk faster. |  |

1. File compression (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear description of the purpose of file compression | 2 |
| Limited description of the purpose | 1 |
| Total | 2 |
| An example answer could be:  Is a process of "packaging" a file (or files) to use less disk space. Compression software allows you to take many files and compress them into one file, which is smaller than the combined size of the original. |  |

**Question 12 (2 marks)**

Outline a key difference between freeware and open source software licencing.

|  |  |
| --- | --- |
| Description | Mark |
| Outlines clearly a key difference | 2 |
| Limited outline of a key difference | 1 |
| Total | 2 |
| An example answer could be:  Software to be deemed as open source is publicly available under a license that gives users the right to study, change, and distribute the software as they wish. While freeware is software that is available at no cost. Such software is still generally closed source or proprietary, such as Adobe Reader and Skype. |  |

**Question 13 (2 marks)**

Consider the following examples of code. Identify which type of programming language these belong to. The first one has been done for you.

|  |  |
| --- | --- |
| Description | Mark |
| Identifies correctly procedural | 1 |
| Identifes correctly assembler | 1 |
| Total | 2 |
| IF x = 5  then y =3  else y = 1  ENDIF | **Procedural** |
| mov ecxm ebx  mov esom edx  mov edx, r9d  mov rax, rdx | **Assembler** |

**Question 14 (2 marks)**

Outline **one** difference between a test first iteration and a test last.

|  |  |
| --- | --- |
| Description | Mark |
| Clear outline of a difference | 2 |
| Limited outline of a difference | 1 |
| Total | 2 |
| An example answer could be:  In a test first iteration the condition is tested before entering the loop. The loop type is a while do. The test last iteration enters the loop and then tests the condition. If the condition is not met the loop continues. The loop type is a repeat until. |  |

**Question 15 (11 marks)**

The agricultural show would like to have an algorithm created that states the award the contestant has won based on the total score received by three judges.

You are required to create an algorithm in pseudocode to solve this problem.

Note: The total score must be between 0 and 20.

A total score between 0 and 11 award equals none.

Between 12 and 14 award equals bronze, between 15 and 17 award equals silver and between 18 and 20 equals gold. Output the award.

|  |  |
| --- | --- |
| Description | Mark |
| A variable for the total score to be initialised | 1 |
| A Correct loop to collect the 3 scores from the judges with a begin and end | 1 |
| Calculation of the 3 scores | 1 |
| A condition for the total score being <0 and >20 | 1 |
| A condition for each of the four award categories | 1-4 |
| A correct selection start and end of the award either case or nested if | 1 |
| Output the award | 1 |
| Correct sequence of statements | 1 |
| Total | 11 |
| An example answer could be:  BEGIN  totalscore🡨0  FOR judge 1 to 3 do  READ(score)  totalscore🡨totalscore+score  ENDFOR  IF (totalscore>0) and (totalscore<21)  Then CASE totalscore of <12 : Award 🡨”None”  <15 : Award 🡨 “Bronze”  <18 : Award 🡨 “Silver”  <21 : Award 🡨 “Gold”  ENDCASE  Else write(“score must be between 0 and 20)  ENDIF  OUTPUT(award)  END  NOTE:  Variations may occur in variable names, condition statements, and may also write a nested if solution. Award logic. |  |

**Question 16 (3 marks)**

A programmer is not sure which data type should be used for decimal places in their algorithm. Explain which type should be used.

|  |  |
| --- | --- |
| Description | Mark |
| Clear explanation as to why the floating point or real data type must be used with detail referring to the context. | 3 |
| Explanation as to why the floating point or real data type must be used | 2 |
| Limited explanation as to why the floating point or real data type must be used | 1 |
| Total | 3 |
| An example answer could be:  The programmer should use floating point or real data type. This is because it is a decimal point and any which requires a real type. Also any calculation that uses division that can create a decimal must be a real type. The reason for this is that integers can only whole numbers, either negative or positive. |  |

**Question 17 (4 marks)**

Convert the following to the decimal number system and show all workings.

1. 1001 11102 (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Correct working out – this is one example | 1 |
| Correct answer | 1 |
| Total | 2 |
| An example answer could be:  Answer 158   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |   128 + 16 + 8 + 4 + 2 = 158 |  |

1. 34F16 (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Correct working out – this is one example | 1 |
| Correct answer | 1 |
| Total | 2 |
| An example answer could be:  Answer is 847 - 768 + 64 + 16 = 847   |  |  |  | | --- | --- | --- | | 256 | 16 | 1 | | 3 | 4 | F | |  |

**Question 18 (2 marks)**

Convert the following decimal number into binary.

4110

|  |  |
| --- | --- |
| Description | Mark |
| Correct working out – this is one example | 1 |
| Correct answer | 1 |
| Total | 2 |
| An example answer could be:  Answer is 001010012  Read up  101001   |  |  |  | | --- | --- | --- | | 2 | 41 |  | | 2 | 20 | 1 | | 2 | 10 | 0 | | 2 | 5 | 0 | | 2 | 2 | 1 | | 2 | 1 | 0 | | 2 | 0 | 1 | |  |

**Question 19 (10 marks)**

1. A company wants to set up a network and they are unsure which type to create. They are a small business with 9 computers, a server and a printer. They were told that a peer to peer network would be sufficient instead of a client server. Justify why you disagree with this statement. (4 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear justification as to why it should not be a peer to peer but a client server network with examples from the context. | 4 |
| Adequate justification as to why it should not be a peer to peer but a client server network with examples from the context. | 3 |
| Adequate justification as to why it should not be a peer to peer but a client server network without reference to context | 2 |
| Limited justification as to why it should not be a peer to | 1 |
| Total | 4 |
| An example answer could be:  Even though there are no real guidelines on how many computers can be linked to a peer to peer network it does have a number of disadvantages once it gets to reasonable size. The company has 10 nodes, including the printer and have a server. Therefore it makes sense to have the computers connected to the server via a switch so that they have shared resources, security and ease of backups, etc.  Accept other logical answers. |  |

1. The company is also not sure which transmission media to use.

Explain **two** differences between using shielded twisted pair and fibre optic. (3 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Detailed explanation of two differences | 3 |
| Limited explanation of two differences | 2 |
| Explanation of one difference | 1 |
| Total | 3 |
| An example answer could be:  The construction of the cables is different with STP made with copper wiring wrapped with a foil shield while fibre optic is based on tiny threads of glass, fibre glass etc. The transmission capacity of optical fibre cable is 26,000 times higher than that of twisted pair cable so for high speed it is better to use fibre, also there is no need for repeaters.  Accept other logical answers. |  |

1. The company have decided to purchase some laptops as the employees like to move to different areas in the office. Justify which type of transmission media should be installed. (3 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Detailed justification of transmission media related to the context | 3 |
| Detailed justification of transmission media | 2 |
| Limited justification of transmission media | 1 |
| Total | 2 |
| An example answer could be:  The employees want to move to different areas so it would make sense to install a wireless systems and the laptops will likely have wifi capability. They would need to install a WAP however this will allow them to have mobility. |  |

**Question 20 (3 marks)**

There are a number of communication protocols that are used within networks.

1. Explain the different use between Hypertext transfer protocol secure (HTTPS) and Hypertext transfer protocol (HTTP). (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear explanation of the difference | 2 |
| Limited explanation | 1 |
| Total | 2 |
| An example answer could be:  Hyper Text Transfer Protocol Secure (HTTPS) is the secure version of HTTP, the protocol over which data is sent between your browser and the website that you are connected to. The 'S' at the end of HTTPS stands for 'Secure'. It means all communications between your browser and the website are encrypted. |  |

1. Identify the additional protocol that is used with HTTPS. (1 mark)

|  |  |
| --- | --- |
| Description | Mark |
| [Transport Layer Security](https://en.wikipedia.org/wiki/Transport_Layer_Security) (TLS), or formerly, its predecessor, Secure Sockets Layer (SSL) | 1 |
| Total | 1 |
| Accept either TLS or SSL |  |

**End of Section One**

**Section Two: Extended answer 60% (106 Marks)**

**Question 21 (29 marks)**

1. TSU pharmaceuticals have employed you to analyse their current system. Explain **two** activities you would undertake in the preliminary analysis stage of the system development life cycle (SDLC). (6 marks)

|  |  |
| --- | --- |
| Description  For each activity explained | Mark |
| Detailed explanation of an activity relating it to the context | 3 |
| Satisfactory explanation | 2 |
| Limited explanation | 1 |
| Total | 6 |
| An example answer could be:  Investigate the present system and identify the functions to be performed to scope the project.  Identify the objectives of the new system. In general, an information system benefits a business by increasing efficiency, improving effectiveness, or providing a competitive advantage  Identify problems and suggest a few solutions.  Identify constraints, i.e. the limitations placed on the project, usually relating to time, money and resources  Evaluate feasibility - whether the proposed system promises sufficient benefit to invest the additional resources necessary to establish the user requirements in greater detail  Accept other reasonable answers and to get full marks the answer needs to relate back to the case study. |  |

1. They have given you a 4-week timeframe to conduct the preliminary analysis and report to them on how long it will take to rectify their problems. Explain the main tool you will use to keep on schedule and meet this deadline. (3 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Detailed explanation of a main tool relating it to the context | 3 |
| Satisfactory explanation | 2 |
| Limited explanation | 1 |
| Total | 3 |
| An example answer could be:  A gantt chart would be good to use as it keeps track of time and milestones which will enable the 4 week timeframe to be met. Other tools that could be suggested include the use of Case tools, etc. |  |

1. Use the information from the source booklet and draw a context diagram to illustrate the *request for fund system* below. (7 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Each correct entity – 1 mark each | 1-3 |
| Correct name of system | 1 |
| Correct flows to and from Scientist to system | 1 |
| Correct flows to and from Government to system | 1 |
| Correct flows to and from External Consultant to system | 1 |
| Total | 7 |
| An example answer could be: |  |

1. Use the information from the source booklet and draw a Level 0 data flow diagram (DFD) to illustrate the *request for fund system* below. (13 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Entities correct and relate to student’s CD from 21a | 1-3 |
| Database identified | 1 |
| Processes correct and labelled with numbers and verbs (verbs may differ) | 1-5 |
| Data flows correct from database | 1 |
| Data flows to and from entities correct to the processes | 1-3 |
| Total | 13 |
| An example answer could be:    Variations in diagrams are allowable as long as the diagram is logical |  |

**Question 22 (22 marks)**

Your report to TSU pharmaceuticals is completed on time and you are awarded the contract to update their infrastructure. Your findings indicate that they do not have a standard operating system and their hardware is more than 4 years old.

1. Explain **three** benefits that the company will have by installing a standard operating environment. (3 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear explanation of 3 benefits related to the context. | 3 |
| Clear explanation of 2-3 benefits | 2 |
| Limited explanation of 1-3 benefits | 1 |
| Total | 3 |
| An example answer could be:  The benefits of establishing an SOE for TSU include:   * Improved service availability * Reduced complexity * Reduced maintenance costs   Other benefits may be explained. |  |

1. The latest pharmaceutical software that they would like installed has the following minimum specifications - multicore Intel ® processor with 64-bit support, 4GB RAM, 10.5GB hard disk space and a 64-bit operating system.

Your recommendation is that they should purchase desktops with the following specifications - Dual core 2.4 GHz+ (i5 or i7 Intel or equivalent AMD), RAM 16 GB, 1TB hard drive, 23” monitor, Windows 10 operating system (64 bit).

Explain, using examples, why this would be your recommendation. (3 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear explanation using examples why this recommendation is made | 3 |
| Clear explanation why this recommendation is made | 2 |
| Limited explanation why this recommendation is made | 1 |
| Total | 3 |
| An example answer could be:  The latest software has less specification than what is being recommended however for the computers to last 3 years it is important to future proof the system and ensure that the system has more specifications than the minimum. Also other software would be needed to run and this may have higher specs. The recommended system will last the time and give TSU a good performance. The software requires 64 bit support and the recommended system supports this. It has 16 GB RAM and can support the s/w. The hard drive will need to also have the operating system etc. so needs to be large enough for the OS, applications and other files.  Accept other answers. |  |

1. TSU pharmaceuticals administration are on the 4th floor of the head office building illustrated below. Indicate below where you would place the following network and hardware components and the transmission media you would use: router, switch firewall, WAP, 7 computers, 1 printer, 1 server. (10 marks)

|  |  |
| --- | --- |
| Description | Mark |
| 7 computers on the floor plan – 1 per office and reception. Conference room optional | 1 |
| 1 printer on the floor plan logical placement | 1 |
| Firewall in Mechanical room | 1 |
| Router in mechanical room | 1 |
| Server in mechanical room | 1 |
| Switch in a logical place out the way | 1 |
| WAP in a logical place | 1 |
| Explanation part. |  |
| Explanation logical with each part being justified as to why it is located in the spot | 3 |
| Limited explanation | 2 |
| Lists a reason with no explanation | 1 |
| Total for both parts | 10 |
| An example answer could be: Location of the switch and WAP may vary but it must be in a logical place. Same as the computers and printer. |  |

1. TSU pharmaceuticals do not currently have any method to protect themselves from malware.
2. Describe a method of protection that could be use. (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Clear description of a method of protection | 2 |
| Limited description | 1 |
| Total | 2 |
| An example answer could be:  A method that could be used to protect TSU is install antivirus software and ensure that it is updated at all times.  Others include   * Install Firewall. * Install Antivirus Software. * Install **Anti**-Spyware Software. * Use Complex and Secure Passwords. * Check on the Security Settings of the Browser. |  |

1. Describe **two** types of malware that could infect their system. (4 marks)

|  |  |
| --- | --- |
| Description  Marks allocated per each type | Mark |
| Detailed description of a type of malware that could infect their system | 2 |
| Limited description of a type of malware that could infect their system | 1 |
| Total | 4 |
| An example answer could be:  A computer virus is a malicious software program loaded onto a user’s computer without the user’s knowledge and performs malicious actions.  A computer worm is a standalone malware computer program that replicates itself in order to spread to other computers.  Other malware in the syllabus is Trojans and spyware |  |

**Question 23 (26 marks)**

1. Use the information from the source booklet and complete the algorithm to display the menu in this application. You do not need to create any of the procedures. Ensure that you display all choices to the user. (9 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Loop begin and end with to go through menu | 1 |
| Output of choices | 1 |
| Input of choice | 1 |
| Selection statement to ensure that the choice is within 1 and 5 | 1 |
| Case or Nested if with choices to call the different procedures | 1-5 |
| Total | 9 |
| An example answer could be:    There are a number of ways to do this code so accept other logical answers |  |

1. Use the information from the source booklet and create a flow chart to represent the algorithm required. (11 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Initialise of sum, count, min and max | 1-4 |
| Loop for 1 to 6 results | 1 |
| Condition of result = 6 | 1 |
| Increment count | 1 |
| Sum = sum + num | 1 |
| Num < min | 1 |
| Num> max | 1 |
| Ave = sum/count | 1 |
| Total | 11 |
| An example answer could be:    Answers may vary. |  |

1. The algorithm below is used to check the outcome of the test results. (6 marks)

BEGIN

count 🡨 0

total 🡨 0

WHILE count <5 do

read(test)

count 🡨 count + 1

total 🡨 total + test

ENDWHILE

IF total > 1000

THEN output(“Success”)

ELSE output(“Resubmit”)

ENDIF

END

Complete the trace table below with the following data.

*test* – 150, 260, 140, 300, 58

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Description | | | | | | Mark |
| 1 mark for each correct column | | | | | | 1-6 |
| Total | | | | | | 6 |
| An example answer could be: | | | | | |  |
| count | total | count<10 | test | total>1000 | output | |
| 0 | 0 | T | 150 |  |  | |
| 1 | 150 | T | 260 |  |  | |
| 2 | 410 | T | 140 |  |  | |
| 3 | 550 | T | 300 |  |  | |
| 4 | 850 | T | 58 |  |  | |
| 5 | 908 | F |  | F | Results | |

**Question 24 (28 marks)**

1. Use the table from the source booklet to create an accurate entity relationship diagram (ERD) using Chen’s notation that represents the data that can be used by a relational database.

Ensure you include any entities, relationships, cardinality, primary and foreign keys required. (15 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Entities correctly labelled – 1 mark each | 1-4 |
| Correct primary keys for all 4 entities – 1 mark correctly for each entities pk | 1-4 |
| Foreign keys – 1 mark for each correct | 1-3 |
| Cardinality correct for each – 1 mark for each correct | 1-3 |
| Use chen’s notation correctly | 1 |
| Total | 15 |
| An example answer could be: |  |

1. Use the spreadsheet information from the source booklet to answer the following questions
2. In Table 1, write the formula that would be in cell H4. (1 mark)

|  |  |
| --- | --- |
| Description | Mark |
| =F4\*G4 | 1 |
| Total | 1 |

1. In Table 1, write the formula that would be in cell J8. (1 mark)

|  |  |
| --- | --- |
| Description | Mark |
| =H8\*I8 | 1 |
| Total | 1 |

1. In Table 1, write the formula that would be in cell J12 (2 marks)

|  |  |
| --- | --- |
| Description | Mark |
| =sum | 2 |
| (J4:J10) | 1 |
| Total | 2 |

1. In Table 1, write the lookup formula that would be in cell B9. The lookup table is in Table 2. (4 marks)

|  |  |
| --- | --- |
| Description | Mark |
| =vlookup(C9 (lookup value) | 1 |
| lookup!A4:G10, (table array with name of worksheet with table 2) | 1 |
| 2, (the column to look up) | 1 |
| FALSE) for exact search | 1 |
| Total | 4 |
|  |  |

1. The pie chart in the source booklet is not easy to read. In the space below, create a column chart to replace the pie chart. (5 marks)

|  |  |
| --- | --- |
| Description | Mark |
| Title correct for graph | 1 |
| X axis correctly labelled either with drug names or dollar values | 1 |
| Y axis correctly labelled either with drug names or dollar values | 1 |
| Monthly cost columns shown | 1 |
| Monthly cost adjusted by discount columns shown | 1 |
| Total | 5 |
| An example answer could be: |  |