SPRINGFIELD SECONDARY SCHOOL

"BETTER SELF FOR BETTER TOMORROW"

Preliminary Examination 2022

COMPUTING **7155/01**

Paper 1

Secondary 4 Express / 5 Normal Academic

MARKING GUIDE FOR TEACHERS

2 hours

MAXIMUM MARK: 80

This document consists of 8 printed pages.

<table>
<tr><th>Question Number</th><th>Answer</th><th>Marks</th><th>Total Marks</th></tr>
<tr><td>1a</td><td>A3 – Number
B3 – Currency
D7 – Percentage</td><td>3</td><td rowspan="4">8</td></tr>
<tr><td>1b</td><td>= SUM(B2:B7)</td><td>1</td></tr>
<tr><td>1c</td><td>=COUNTIF(F2:F7,"Yes")</td><td>1</td></tr>
<tr><td>1d</td><td>The formula will check that <u>either B7 is more than $50000 or C7 is more than 5</u> [1]. <u>The formula will return “Yes” if the criteria is fulfilled</u> [1], it will <u>return a blank otherwise</u> [1].

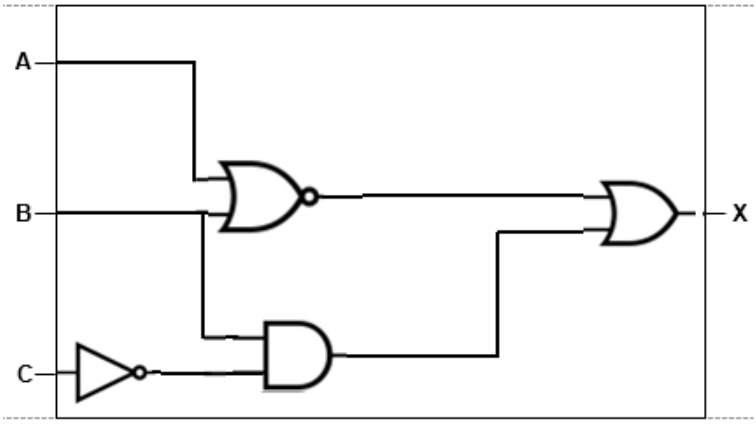
=IF(OR(B7>50000,C7>5), "Yes","")</td><td>3</td></tr>
<tr><td>2a</td><td>arithmetic logic unit
control unit
memory
data and address buses
input, output

For each correct answer [1]</td><td>6</td><td rowspan="2">11</td></tr>
<tr><td>2b</td><td><table>
<tr><th>Statement</th><th>Optical</th><th>Magnetic</th><th>Solid-state</th></tr>
<tr><td>Data is stored as very small pits.</td><td>✓</td><td></td><td></td></tr>
<tr><td>Fastest in reading and writing</td><td></td><td></td><td>✓</td></tr>
<tr><td>Relatively large storage capacity (at least 1TB).</td><td></td><td>✓</td><td></td></tr>
<tr><td>Vulnerable to drops, mechanical shock, scratches, and fingerprint.</td><td>✓</td><td>✓</td><td></td></tr>
</table>
For each correct answer [1]</td><td>5</td></tr>
<tr><td>3a</td><td>157</td><td>1</td><td rowspan="3">5</td></tr>
<tr><td>3b</td><td>13A
Working [1], Correct Answer [1]</td><td>2</td></tr>
<tr><td>3c</td><td>It makes the data or binary values easier to read/write/debug.
It is a shorter way to represent the binary values.
It will reduce the amount of possible errors as compared to using binary representation.</td><td>2</td></tr>
</table>

4a	**Input** The list of item and the quantity sold. [1] The list of cost of each item. [1] **Output** The most popular item sold for the day. [1] The total earnings for the day. [1] **Process** From the quantity list, find the item with the most quantity sold for the day and output it as the most popular item. [1] The sales received from each item is calculated by multiplying the quantity of each item sold and its cost in the cost list. The total earning for the day is obtained by adding the sales of every item. [1]	2 2 2	6
5a	Positive impact - Use of video conferencing tools for medical consultation allows patients to have better access to healthcare. - Analysing of medical data to identify warning signs of possible health problem and provide doctors with more accurate diagnosis. Negative impact - Patients find the use of robot and other technology impersonal and may mistrust the ability of machines to provide proper healthcare. - Patients may be uncomfortable with the collection of medical data to improve the performance of healthcare-related AI. Any 1 positive and negative impact / arguments with sound discussion.	2	9
5b	Positive impact - Use of internet banking allows financial services to be more efficient, hence saving time and cost for both individuals and businesses. - Use of AI to analyse transaction data allows banks to identify unusual spending patterns, hence detect and prevent financial fraud more effectively. Negative impact - Use of internet banking causes individuals and businesses to be more susceptible to cyber criminals and scammers due to easier access to banking activities.	2	

<table>
<tr><td></td><td>Any 1 positive and negative impacts / arguments with sound discussion.</td><td></td><td></td></tr>
<tr><td>5c</td><td>Companies use data collected from gaming sites to make targeted approach and make money off addicted players.

Companies do not closely monitor the access of age differentiated content, hence causing younger audience to be exposed to inappropriate contents.

Any 1 ethical issue with sound discussion.</td><td>1</td><td></td></tr>
<tr><td>5di</td><td>Copyright. [1]
Check and follow the website’s term and condition / Consider using public domain material instead [1]</td><td>2</td><td></td></tr>
<tr><td>5dii</td><td>Plagiarism [1]
Passing off someone else’s original work as one’s own. [1]</td><td>2</td><td></td></tr>
<tr><td>6a</td><td> 

Each correct gate with the correct input [1]</td><td>4</td><td>8</td></tr>
<tr><td>6b</td><td>
<table>
<tr><td></td><td></td><td></td><td colspan="3">Working space</td><td></td></tr>
<tr><td>A</td><td>B</td><td>C</td><td>A NOR B</td><td>NOT C</td><td>NOT C AND B</td><td>X</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td></tr>
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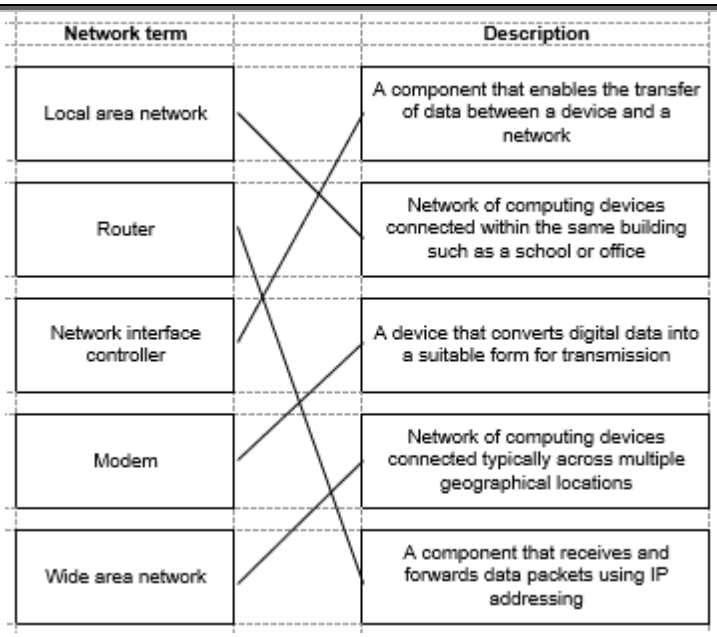
<tr><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table>

8 correct outputs [4]
6 correct outputs [3]
4 correct outputs [2]
2 correct outputs [1]</td><td>4</td><td></td></tr>
</table>

7a	 For each correct match [1]	5	9
7b	Factor - Cost Explanation – Wired network is cheaper initially, but wireless becomes more cost effective as network grows in size. Factor - Speed of transmission Explanation – Wired network is faster and has higher bandwidth. Factor – Reliability Explanation – Wired network is more reliable as data transmission is unaffected by interference. Factor – Security Explanation – Wired network less susceptible to interception and hacking. Factor – Mobility of users Explanation – Wireless network allows users to move about freely. Factor – Scalability Explanation – It is easier to add new devices to a wireless network as there are no physical constraint such as the running of cables. Factor – Physical organization Explanation – Wireless network tend to be more organised since there are no cable connection. Accept any two of the above factors [2] and the corresponding explanations [2].	4	

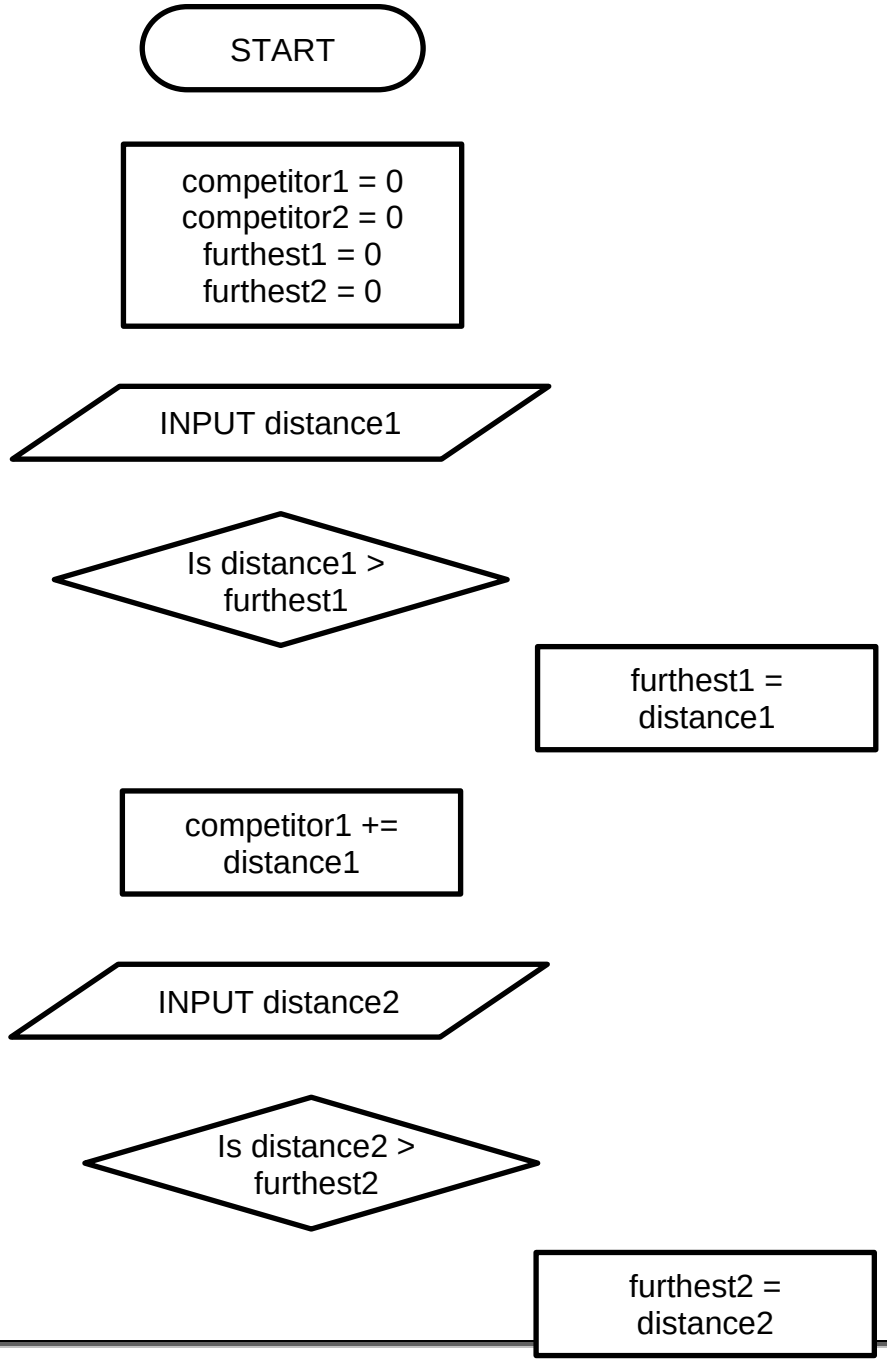
8a **8b** **8c**	Even parity check 00111000 [1] 11001101 [1] Checksum method [1] A checksum is calculated and sent together with the data [1]. At the destination, the checksum is recalculated and compared to the sent checksum value to verify that there is no error in transmission. [1]	1 2 3	6
9	Error 1 = Line 04 Correction = `WHILE num is not an integer or num < 0 or num > 8` Error 2 = Line 09 Correction = `bib_list = []` Error 3 = Line 11 Correction = `FOR x = 1 to num` Error 4 = Line 17 Correction = `bib_list += [bib]` Error 5 = Line 23 Correction = `OUTPUT bib_list[i]`	10	10

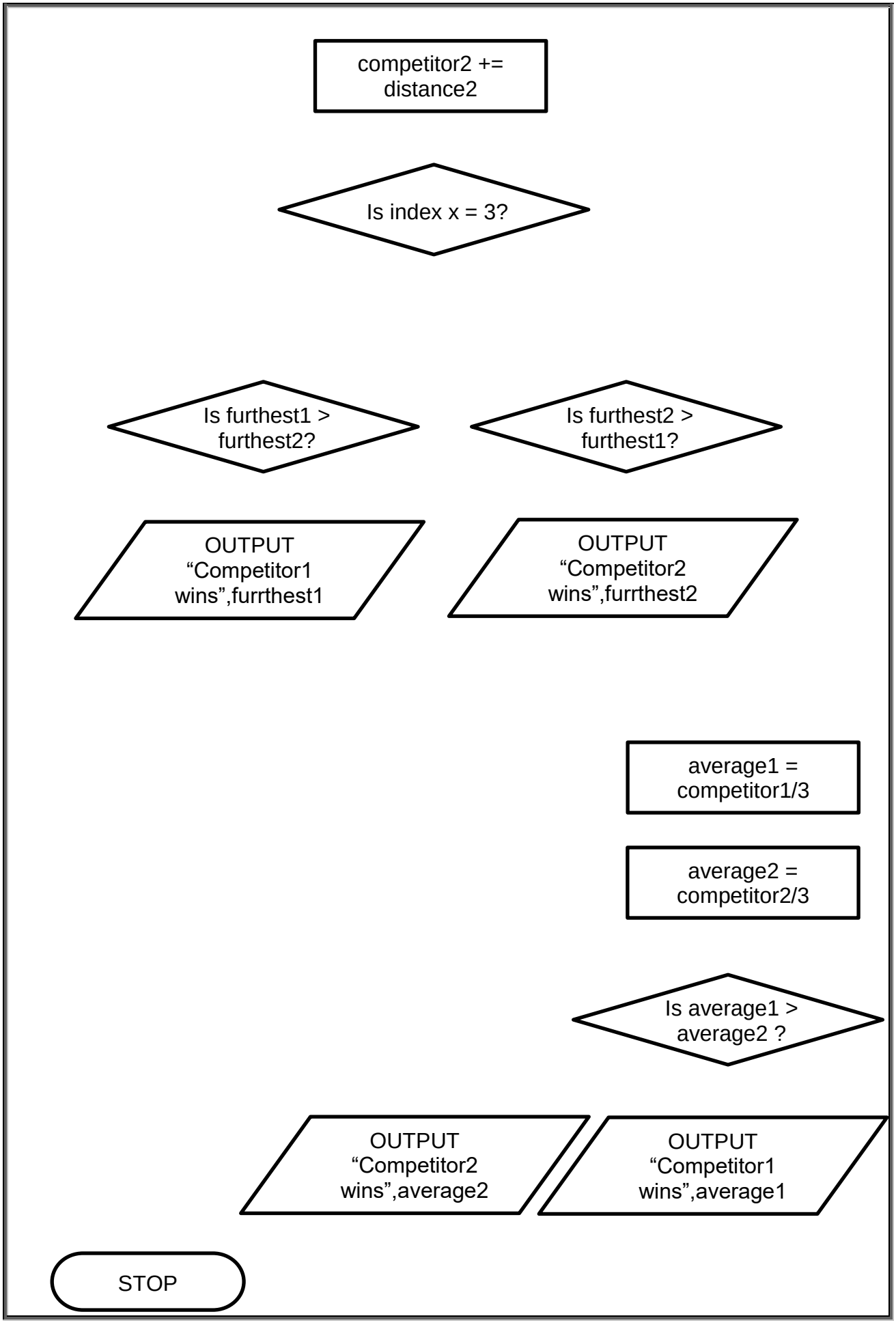
10	competitor1 = 0 #initialising [1]
	competitor2 = 0
	furthest1 = 0
	furthest2 = 0
	
	FOR x = 1 to 3 #iteration [1]
	  OUTPUT “Enter distance for competitor 1”
	  INPUT distance1 #input [1]
	  IF distance1 > furthest1 #highest [1]
	  furthest1 = distance1
	  ENDIF
	  competitor1 = competitor1 + distance1 #average [1]
	
	  OUTPUT “Enter distance for competitor 2” #[1]
	  INPUT distance2
	  IF distance2 > furthest2
	  furthest2 = distance2
	  ENDIF
	  competitor2 = competitor2 + distance2
	NEXT
	
	IF furthest1 > furthest2 #processing and output [1]
	  OUTPUT “Competitor 1 wins! Distance: “, furthest1
		8	8

```
ELSE IF furthest2 > furthest1     #processing and output
  OUTPUT "Competitor 2 wins! Distance: ", furthest2

ELSE #processing and output [1]
  IF competitor1/3 > competitor2/3     #average
    OUTPUT "Competitor 1 wins! Distance: ", competitor1/3
  ELSE     #processing and output
    OUTPUT "Competitor 2 wins! Distance: ", competitor2/3
  ENDIF
ENDIF
```

11. Flowchart




competitor2 += distance2
Is index x = 3?
Is furthest1 > furthest2?
Is furthest2 > furthest1?
OUTPUT "Competitor1 wins",furrthest1
OUTPUT "Competitor2 wins",furrthest2
average1 = competitor1/3
average2 = competitor2/3
Is average1 > average2 ?
OUTPUT "Competitor2 wins",average2
OUTPUT "Competitor1 wins",average1
STOP