

JUNYUAN SECONDARY SCHOOL PRELIMINARY EXAMINATION 2020 SECONDARY FOUR EXPRESS

CLASS	INDEX NUMBER	

Paper 1 Written

COMPUTING

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number in the spaces at the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

Approved calculators are allowed.

Answer **all** questions.

The number of marks is given in brackets [] at the end of each question or part question. You should show all your working.

The total number of marks for this paper is **80**.



7155/01

2 hours

31 Aug 2020

- 2
- 1 The following list shows five types of storage mediums:

flash memory card internal hard disk CD-ROM

DVD

external hard disk

(a) The table below shows five applications.

For each application, choose the most appropriate storage medium from the list above.

Application	Storage Medium
Storage of a text book in electronic form	
Storage of photographs in a mobile phone	
A offline backup of a complete PC file system	
Storage of an operating system and applications software	
Playback of video files	

[5]

(b) (i) From the list above, name the storage medium which is an example of a solid state memory.

[1]

(ii) Give two advantages of using solid state memory.

1	
2	
2	

2 The following diagram shows six network terms and six descriptions.

Draw a line from each network term to its best description.

Network term	Description
Wired network	A component that receives and forwards data packets using IP addressing
Wireless network	A combination of computers and components that are only connected using cables
Bridge	An internal component that allows a computer to connect to a network
Router	A combination of computers and components that are only connected using radio waves
Network Interface Card (NIC)	A combination of computing devices covering a large-scale geographical area
Wide area network (WAN)	A component that joins similar networks together

[6]

3 Computers use a character set to convert text into binary numbers. One character set that can be used is ASCII.

Each letter in ASCII can also be represented as a denary value.

(a) The word CAR has the denary values:

С	Α	R
67	65	82

Convert the three denary values into 8-bit binary digits.



(b) Each letter in ASCII can also be represented as a hexadecimal value.

The word **PEN** has the 8-bit binary values:

Р	E	Ν	
0101 0000	0100 0101	0100 1110	

Convert the three 8-bit binary values into hexadecimal values.

0101 0000

0100 0101

0100 1110

[3]

4 An online book seller wants to use a computer to find out the best-selling book title in 2019. There were 200 different books titles for sale in 2019 and the number of copies sold for each book title was different.

State the inputs, the outputs and processes required to find the title of the best-selling book and the number of copies sold for this title.

Inputs	1	
	2	
Outputs	1	
	2	
Processes	1	
	2	
		[6]

5 Insert five of the following words about Computational Thinking in the correct place in the text below. Each word can only be used once.

generalisation	decomposition	pattern recognition		
smaller	larger			
differences		similarities		
The technique of	is a m	nethod of breaking down a		
complex problem or process ir	nto	parts such that each		
part is more manageable and easier to understand.				
The technique of	is	a method of identifying		
among two or more items.				
The technique of is a method of replacing two or more				
similar items with a single, more common item.				

6 (a) Draw the logic circuit to represent the following Boolean statement. Do not simplify the statement.

X = (A NOR B) OR (NOT C AND B)



(b) Complete the truth table for the Boolean statement:

X = (A NOR B) OR (NOT C AND B)

Α	В	С	Working space	х
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[4]

- 7 A pseudo-code algorithm:
 - allows a user to input 10 numbers
 - checks the number of inputs that are within the range of 5 and 25, both inclusive
 - outputs a message to show the numbers that are within the range
 - outputs a message to show the numbers that are outside the range.

```
1
     Within Range = 0
     Outside Range = 1
2
3
     FOR Count = 1 to 10
          OUTPUT "Enter number"
4
5
          INPUT number
          IF number >= 5 OR number <= 25 THEN
6
7
               Within Range = Within Range + 1
8
          ELSE
9
               Outside_Range = Outside_Range - 1
10
          ENDIF
11
     Count = Count + 1
     NEXT Count
12
13
     OUTPUT Within Range, Outside Range
```

There are **four** errors in the given algorithm.

State each error **and** write the correct pseudo-code.

Error 1

Correction	
Error 2	
Correction	
Error 3	
Correction	
Error 4	
Correction	

- 8 Spywares and Trojan horses are two examples of online security threats to a computer system.
 - (a) Explain what is meant by Spywares and Trojan horses and the threat that each of them pose to a computer system.

	Spy	ywares	
	Tro	ojan horses	
(b)	(i)	Identify one other online security threat to a computer system.	[4]
	(ii)	Based on the online security threat that you have identified in (b)(i), describe one security measure that can help to protect a computer system against that threat.	[1]
			[1]

- **9** With the introduction of Home-based Learning, schools have been using technology both in the classrooms as well as outside of the classrooms.
 - (a) Give **one** positive social impact and **one** positive economic impact of students using technology in their school.

Social impact **Economic impact** [2] (b) One negative social impact of using technology at home is that students may become addicted to their mobile devices. (i) Give one way that students can avoid getting addicted to their mobile devices. [1] (ii) Give two other negative impacts of using technology in the school. 1 2

10 Consider the following algorithm.

```
1 Number = 0
2
 OUTPUT "Key in Number1: "
3 INPUT Number1
4 OUTPUT "Key in Number2: "
5 INPUT Number2
6
 IF Number1 > Number2
7
      Number = Number1 - Number2
  ELSE
8
      Number = Number2 - Number1
9
10 ENDIF
11 OUTPUT Number
```

(a) (i) Complete the following trace table for the algorithm.

Use the data 6, 4 as input.

Number1	Number2	Number	Output

[4]

(ii) State the purpose of the algorithm.

(b) (i) The algorithm does not include validation on input.Name one validation check that could be added to validate the input.

<i>/</i> \		[1]
(11)	Once complete, the algorithm is tested with data for normal conditions.	
	Identify one other test case condition that could be used to test the algorithm	n.
	For this test case condition, give one example of test data for this algorithm.	
	Test case condition	
	Test data	

11

[2]

11 Samuel has taken a \$100,000 loan to keep his business afloat during the Covid-19 crisis. The loan is to be repaid over 5 years. The interest rate is 5% per year. He has a spreadsheet to keep track of the repayments and the amount he owes.

	A	В	С	D	E
1	Initial Loan	\$100,000.00		Date of Repayment	Amount Paid
2	Interest Rate	5%		1/1/2020	\$1,887.12
3	Loan Length (months)	60		1/2/2020	\$1,887.12
4	Monthly Payment	(\$1,887.12)		1/3/2020	\$1,887.12
5	Total Amount to Pay	\$113,227.40		1/4/2020	\$1,887.12
6					
7	Total Amount Paid to Date	\$7,548.48			
8	Amount Owed	\$105,678.91			
9	Number of Payments Made	4			

(a) State the type of data that is held in each of the following cells.

A1	
B 3	
D2	

[3]

(b) (i) The cell **B4** shows the monthly payment amount.

Identify the most appropriate function to use in cell **B4**, if the interest rate and monthly payment remain the same.

[1]

(ii) The cell B7 shows the total amount that Samuel has paid to date. The payments are entered in cells E2 to E5. Identify the most efficient function to use in cell B7.

[1]

(iii) The formula in cell **B9** calculates the number of payments made. Identify the most appropriate function to use in cell **B9**. 12 A customer wants to compare prices of 100 items sold in two online shops.

Write an algorithm, using pseudocode only, which:

- inputs the two prices for all 100 items
- outputs the number of items that were more expensive in shop A
- outputs the number of items that were more expensive in shop B
- outputs the largest price difference

End of Paper

[8]

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