

# KULLEĠĠ SAN BENEDITTU

## Boys' Secondary, Kirkop

Mark

HALF-YEARLY EXAMINATION – 2012/2013

Track 3 (JL)



FORM 4

COMPUTING

TIME: 1h 30min

Question	1	2	3	4	5	6	7	8	Global Mark
Max. Mark	10	12	10	13	6	16	15	18	100
Mark									

**Instructions to students:**

*Answer ALL questions.*

*Calculators are NOT allowed; Good English and orderly presentation are important.*

*Read each question carefully.*

DO NOT WRITE ABOVE THIS LINE

Name: \_\_\_\_\_

Class: \_\_\_\_\_

1. This question covers various topics covered in Computing. Fill in each of the following statements with a suitable word. [10 marks]

	Answer
a. Application software which is used to create a database.	
b. The term used when uploading and downloading files from the Internet.	
c. The number system used in computing, made up of 1s and 0s only.	
d. This is the 3 <sup>rd</sup> fastest computer and can be used in schools.	
e. A computer health problem which is caused by working at the keyboard and using a mouse every day.	

f. A storage device with direct file access.	
g. Hardware used to produce drawings on very large printing paper.	
h. The computer version of a hard copy.	
i. The code understood by the computer.	
j. The process of copying files from the hard disk to a secondary storage device.	
k. Second smallest unit of storage, made up of 8 binary digits.	
l. A database object used to extract information from a database by entering different criteria.	
m. A storage device storing up to 4.7 GB.	
n. Application software used to create newsletters and brochures.	
o. An input device found on laptops and used instead of a mouse.	
p. The name of the editor used to create java programs.	
q. This type of data is fixed, non-continuous and has only two values 1 or 0.	
r. An image made up of points, lines, shapes and curves.	
s. An input and output device used in supermarkets or restaurants.	
t. The name given to Hello.class once compiled from the source Hello.java.	

2. This question is on Computer Logic. Convert the following:

[12 marks]

Show all your working and answers.

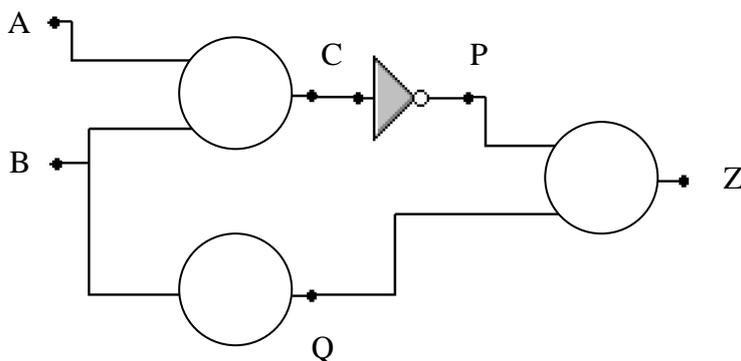
Binary	Decimal	Hexadecimal
1100 1100		
		EB
	186	

Space for working

3. This question is on Logic Gates.

[10 marks]

The figure below shows a logic circuit with some un-named gates and its incomplete truth table.



- a. Using the information given in the truth table in (b), identify and write down below the names of the three missing logic gates. Write down **AND**, **OR** or **NOT**. [3]

Logic Gate with output C	Logic Gate with output Q	Logic Gate with output Z

- b. Complete the truth table to show the output Z. [4]

A	B	C	P	Q	Z
1	1				
1	0		0	1	0
0	1	1	0	0	
0	0				

- c. Write down the Boolean expression of the above logic circuit. [3]

\_\_\_\_\_

Working for expression:

**4. This question is on Systems Analysis.**

**[13 marks]**

a. What is systems analysis and why is it necessary? [3]

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b. Briefly outline 1 operation that takes place at each of these steps in the system life-cycle: [3]

i. Feasibility study

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ii. Testing

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iii. Changeover method

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c. Put the following system developing tasks in order (1 – 7): [7]

Task	Order number
Design the new system.	
Install a new system.	
Implement and test system.	
Problem definition of the new system.	
Identify user requirements.	
Check feasibility of system proposed.	
Collect data and analyze existing system.	

**5. This question is on Character Coding Systems.**

**[6 marks]**

a. What does *ASCII* stand for? [1]

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b. What do you understand by the term *ASCII*? [2]

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c. What is the name of the character coding system designed to support international languages like Chinese and Japanese? [1]

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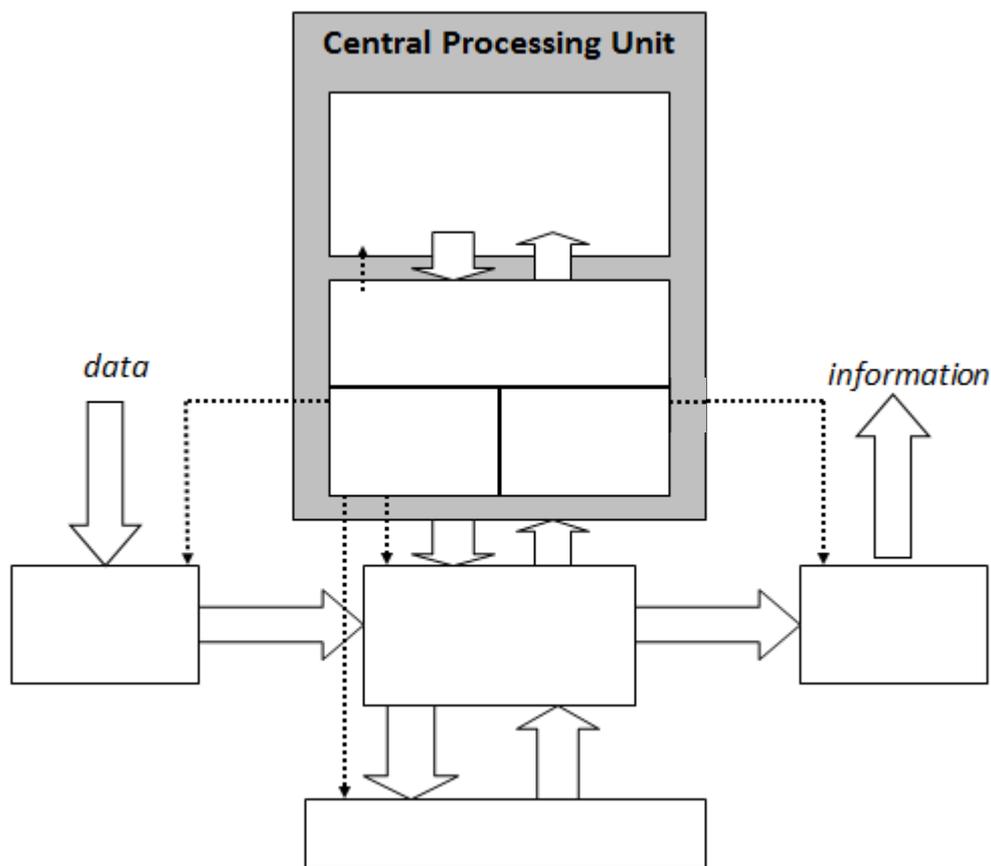
d. How many bits are required to send all the following characters in binary code? (a,b,c,d.....x,y,z, A,B,C,D.....X,Y,Z, 0,1,2 ..... 8,9,+,-,/,\*)? [2]

*Working here:*

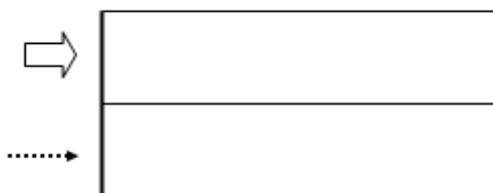
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**6. This question is about the CPU. [16 marks]**

a. Below is a partially-complete hardware block diagram. Label each component carefully. You are allowed to use acronyms when labelling the CPU. [5]



*What do the following arrows represent?*



b. A computer system uses **buses** as a means of transmission. List and define the three main buses: [6]

i. D \_\_\_\_\_ - \_\_\_\_\_

\_\_\_\_\_

ii. A \_\_\_\_\_ - \_\_\_\_\_

\_\_\_\_\_

iii. C \_\_\_\_\_ - \_\_\_\_\_

\_\_\_\_\_

c. Which of the above buses affects: [2]

i. the addressable space - \_\_\_\_\_

ii. the word length - \_\_\_\_\_

d. Alan needs to buy a new computer. There are two models which are almost identical, however, one has a 16-bit CPU and the other has a 32-bit CPU.

i. What does the **16-bit** refer to? [1]

\_\_\_\_\_

ii. Which model would you suggest that he buys and why? [2]

\_\_\_\_\_

\_\_\_\_\_

**7. This question is about Computer Registers.**

**[15 marks]**

a. Which register am I? [3]

i. I shift bits to the left or to the right to carry out mathematical operations.

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ii. I hold the address of the next instruction to be executed.

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iii. I control execution of instructions.

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b. Assume a computer uses a **6-bit two's complement** number system. *(Make sure that you show all of your working in the questions below.)*

- i. What is the **largest positive number** which can be represented? Give your answer both in binary **and** as a decimal number. [3]

**Binary :** \_\_\_\_\_

**Decimal:** \_\_\_\_\_

- ii. How would the integer **-10<sub>10</sub>**, be represented in this register? [2]

**Binary:** \_\_\_\_\_

c. Now assume an **8-bit unsigned register** is used.

- i. How can the integer **12<sub>10</sub>** be represented? [2]

**Binary:** \_\_\_\_\_

- ii. Shift the result you got for (i) once to the left. [2]

**Binary:** \_\_\_\_\_

- iii. What effect does this shift operation have on the integer? [1]

\_\_\_\_\_

- iv. How many times **and** in which direction should the binary result in (i) be shifted to get **3<sub>10</sub>** as a result? [2]

**Direction :** \_\_\_\_\_

**Number of times:** \_\_\_\_\_

**8. This question is about the Java Programming Language.**

**[18 marks]**

a. Say whether the following are True (T) or False (F).

[4]

- i. The float data type is used to store whole numbers.
- ii. Java is an object-oriented language.
- iii. The byte data type can hold larger values than the short data type.
- iv. 'integer' is considered to be a java keyword.


b. Answer the questions below.

i. How would you assign the number 10 to a variable of name 'students'? [1]

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ii. Write a line of code to output on the screen: 'I am enjoying this exam'. [1]

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iii. How is the main method in Java declared? [1]

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iv. What is the difference between a variable and a constant? [2]

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v. Why are the buttons below used? [2]



vi. Write a main method to display the data below on the output screen. You should use **escape characters** to answer the question. [7]

	<b>English</b>	<b>Maths</b>
<b>Tony</b>	<b>98</b>	<b>55</b>
<b>Joe</b>	<b>65</b>	<b>70</b>

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**END OF EXAM**