



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
SCIENCE AND TECHNOLOGY DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

INFORMATION TECHNOLOGY

**SUBJECT: Programming Using C++ PAPER NO: 317/13/S02B
(Practical)**

DURATION: 3 Hours

MARCH/APRIL 2017 EXAMINATION

REQUIREMENTS

1. Computer with a C++ compiler
2. Storage device and printing facility
3. At least 2 sheets of paper for rough work

INSTRUCTIONS TO CANDIDATES

1. Answer all questions
2. Print both code and output

This paper consists of 3 printed pages.

QUESTION 1

- a) Write a program that accepts two integers as input and then calculates and displays the sum, difference and product of the two integers. (10 marks)
- b) Write a program that prompts the user to enter values for hourly rate and hours worked. The program should compute and display gross pay, which is calculated as hours multiplied by rate for the first 40 hours, plus hours multiplied by 1.5 multiplied by the rate for any extra hours after 40. The program should also display net pay, which is gross pay minus tax which is calculated as 28% of gross pay if gross pay is over \$1000, 21% of gross pay if gross pay is not over \$1000 but is over \$600, and 10% of gross pay if gross pay is not over \$600 (15 marks)

QUESTION 2

Code a program using functions that displays the following menu:

1. Factorial
 2. Prime
 3. Odd/Even
 4. Exit
- Enter choice

The program allows the user to make a choice from the menu. If the user choose 1, the program asks the user to enter a positive integer, calculates and displays the factorial of the integer. If user chooses 2, the program asks the user to enter an integer, checks whether the integer is prime or not and displays an appropriate message. If the user chooses 3, the program asks the user to enter an integer value, it checks whether the value is odd or even and displays an appropriate message. If user chooses 4, the program displays the message "Exit" and terminates. (20 marks)

QUESTION 3

An NC class has a total of 5 students. A student record consists of Name, Age, Gender. Using an array of structures, code a program that accepts all the details of a student and allows for capturing of 5 student records. The program should display in tabular form the name and age of all female students in the class (15 marks)

QUESTION 4

- a) Create a text file called exam.txt using notepad. The file should have two lines of text. Write a program to read and display the contents of the text file. (10 marks)
- b) Write a program that creates a 2×2 matrix and accepts the elements of the array. The program should display the sum of elements of the major diagonal.

For example matrix: 10 3
 5 4

Output will be: 14 (10 marks)

QUESTION 5

- a) Demonstrate function overloading by writing a program that adds two numbers, one function to add integers and the other to add floats. The functions should be called in the main () function and display the results. (10 marks)
- b) Write a program that accept 5 numbers of integer type and display the average of the numbers using a do.....while loop. (10 marks)

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