Section A

Question 1 (25 marks)

a) With examples, briefly explain the difference between the following concepts as applied in C programming. **(2 marks)**

i. Array vs Variable **(2 marks)**

ii. Pre Increment vs Post Increment

b) Explain under which conditions, you will use For - Loop against a while loop. **(2 marks)**

c) Write C program statements to perform the following operations. **(NOTE: Do not write full program, just specific required statements)**

i. Declare **3X4** integer multi-dimensional array named **matrix** **(2 marks)**

ii. Write loop statements to go through above (i) declared array and print contents of all array elements. **(4 marks)**

d) Establish the output for the following code fragment

i.
```
int x = 3,y = -1,z = 9;
int a = ++x - y++ + --z;
printf("%d %d %d %d",a,x,y,z);
```
(3 marks)

ii.
```
main(){char brazilplayer[]= "Neymar"; char engplayer[] = "wayne";
if(strcmp(brazilplayer, engplayer)== -1){strcpy(brazilplayer,
engplayer); printf("Size %d",strlen(brazilplayer));} printf("
Suarez");}
```
(3 marks)

e) Write a program that prints all prime number between 1 and 500. Your program should make use: loops. **(7 marks)**

Section B

Question 2 (25 marks)

a. In reference to Pointers in C language:

i. Write the three main uses of pointers in C language? **(6 marks)**

ii. With two examples; explain the importance of declaring data type for pointers. **(4 marks)**

b. What is the output of the following code fragments **(6 marks)**

i.
```
int *b, c, a=11; b = &a; c = *b; printf("The a is %d and c is %d",a,c);
printf("\n"); }
```

ii.
```
int my_array[] = {1,23,17,4,-5, 9,8}; int *ptr; int i; ptr = my_array;
for(i=2;i<6;i++) {printf("%d ",*(ptr++));}
```

Write a program that accepts two integers (numerator and denominator) from user, divides the two and display the quotient results. Your program should be able to detect and handle the following exceptions. It should display a message "*Denominator is Zero*" if user enters 0 value for denominator and display "*Input Type Mismatch*" incase user enters any value which is not an Integer. The program should also display "*Program Execution Done!*" when the execution ends regardless an exception occurred or not. **(9 marks)**