

DipIETE -ET/CS {NEW SCHEME}

Time: 3 Hours

JUNE 2014

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. Gray code equivalent of $(1000)_2$ is

- (A) $(1111)_G$ (B) $(1100)_G$
(C) $(1000)_G$ (D) None of these

b. Which of the following types of memory loses data when power is switched off?

- (A) Magnetic tape (B) Static Random Access Memory
(C) Magnetic disk (D) CD-ROM

c. Memory unit is one part of

- (A) Input device (B) Control unit
(C) Output device (D) Central Processing Unit

d. The operators << and >> are

- (A) assignment operator (B) relational operator
(C) logical operator (D) bitwise shift operator

e. Literal means

- (A) a string (B) a string constant
(C) a character (D) an alphabet

f. Unsigned integer occupies

- (A) Two bytes (B) Four bytes
(C) One byte (D) Eight bytes

- g. The loop in which the statements within the loop are executed at least once is called
- (A) do-while (B) while
(C) for (D) goto
- h. A pointer variable can be
- (A) passed to a function as argument (B) changed within function
(C) returned by a function (D) assigned an integer value
- i. What will be the output of the following code?
- ```
#include <stdio.h>
#define ASS Donkey
int main()
{
printf ("ASS");
return 0;
}
```
- (A) ASS (B) BSS  
(C) Donkey (D) 0
- j. A global variable is a variable
- (A) declared in the main ( ) function  
(B) declared in any function other than the main ( ) function  
(C) declared outside the body of every function  
(D) declared anywhere in the C program

**PART A**

**Answer any TWO Questions. Each question carries 16 marks.**

- Q.2** a. What is an algorithm? State and explain basic characteristics of algorithm. (8)
- b. Find (i) Decimal equivalent of  $(11001)_2$   
(ii) Decimal equivalent of  $(1C7)_{16}$   
(iii) Binary equivalent of  $(18)_{10}$   
(iv) Decimal equivalent of  $(1071)_8$  (2×4)
- Q.3** a. Why do we need an Operating System? List basic functions of an operating system. (8)
- b. Compare the characteristics of impact and non-impact printers with examples. What are digitizers? (8)
- Q.4** a. Differentiate between LAN, MAN and WAN. Show with the help of a diagram how will you connect five computers on a LAN. (8)

- b. Distinguish between minicomputer, microcomputer and mainframe computer. (8)

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**PART B**

Answer any **THREE** Questions. Each question carries 16 marks.

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- Q.5** a. What is the output of the following program? Explain. (7)

```
main()
{
int a, b, c, d;

a = 15;
b = 10;
c = ++a - b;

printf("a = %d b = %d c = %d\n",a, b, c);

d = b++ +a;
printf("a = %d b = %d d = %d\n",a, b, d);

printf("a/b = %d\n", a/b);
printf("a%%b = %d\n", a%%b);
printf("a *= b = %d\n", a*=b);
printf("%d\n", (c>d) ? 1 : 0);
printf("%d\n", (c<d) ? 1 : 0);
}
```

- b. Write a C program that requests the user to enter a character and displays a message on the screen telling the user whether the character is an alphabet or digit, or any other special character. (9)

- Q.6** a. Write a program using while loop to evaluate the equation  $y = x^n$  where n is a non-negative integer. (8)

- b. Illustrates the use of the **goto** statement by implementing a C program that evaluates the square root for five numbers. The variable count keeps the count of numbers read. When count is less than or equal to 5, **goto read**; directs the control to the label **read**; otherwise, the program prints a message and stops. (8)

- Q.7** a. The names of employees of an organization are stored in three arrays, namely **first\_name**, **second\_name**, and **last\_name**. Write a program to concatenate the three parts into one string to be called **name** without using standard string concatenation function. (8)

- b. Explain the meaning and syntax of following string handling functions using suitable examples:

- (i) strcmp()
- (ii) strcpy()
- (iii) strlen()
- (iv) strstr()

(2×4)

- Q.8** a. Write a C program using functions to calculate the standard deviation and mean of an array of values. The array elements are read from the terminal. (8)
- b. Explain function and function prototype. State advantages of using functions in a C program. (8)
- Q.9** a. Write a program using pointers to compute the sum of all elements stored in an array. (8)
- b. Write a program to read data from the keyboard, write it to a file called **INPUT**, again read the same data from the **INPUT** file, and display it on the screen. (8)