**Code: DE53/DC53/DE103/DC103**
**Subject: COMPUTER FUNDAMENTALS & C PROGRAMMING**

## DipIETE – ET/CS *{Current & New Scheme}*

Time: 3 Hours      **JUNE 2016**      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. Which of the following is a valid Octal number?

     **(A)** F03                  **(B)** 991
     **(C)** 125                  **(D)** None of these

b. Typically an Operating System is classified as:

     **(A)** System software          **(B)** Application software
     **(C)** Both **(A)** & **(B)**            **(D)** None of these

c. Which character is used as an assignment operator in C language?

     **(A)**   =                    **(B)** →
     **(C)**   ==                  **(D)** ~

d. How many elements will be there in A[10][5] array?

     **(A)** 150                  **(B)** 10
     **(C)** 5                    **(D)** 50

e. What happens if break statements are not included inside each case block?

     **(A)** All the cases get executed
     **(B)** Only the first case executed
     **(C)** All the cases after the selected case get executed
     **(D)** Only the default case get executed

f. While reading a string what does %wc signify?

(A) Read w-character string
(B) Read (w-1) character string
(C) Read a string and upon on encountering 'return', embed blank spaces till w$^{th}$ place.
(D) None of these

g. Which of the following loop constructs execute body of the loop at least once?

(A) while                    (B) do-while
(C) for                      (D) All of these

h. The default return type of a function is _____.

(A) void                     (B) int
(C) char                     (D) float

i. In the expression *ptr = &a, what does & signify?

(A) Address of a             (B) Address of ptr
(C) Value of a               (D) Value of ptr

j. Which function is used to locate a sub-string in a string?

(A) strncat                  (B) substring
(C) strstr                   (D) None of these

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**Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.**

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**Q.2**  a. Define Algorithm. Write the basic characteristics of an algorithm.   **(2+4)**

b. Explain block diagram of computers and features of computers.   **(4)**

c. Convert the following given numbers from one number system to another number system:   **(2×3)**
(i)  $(D6C1)_{16} = (\ ?\ )_{10}$
(ii) $(110101010110)_2 = (\ ?\ )_{16}$
(iii) $(23.8125)_{10} = (\ ?\ )_2$

**Q.3**  a. What are the specialized input methods of computer system which are occasionally used? Discuss some of them in brief.   **(6)**

b. Discuss the advantages and disadvantages of Assembly Language.   **(4)**

c. What are the different services provided by UNIX kernel? Also discuss UNIX system layers.   **(6)**

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**Q.4**  a.  Discuss the purpose of a control bus in a microcomputer.  **(6)**

     b.  Along with a microprocessor chip, what other support chips are required to configure a microcomputer system?  **(4)**

     c.  What is computer networks? Discuss the need of computer communication network.  **(2+4)**

**Q.5**  a.  Write various data types supported in c programming language with examples.  **(5)**

     b.  What is the use of bitwise operators? Describe any two bitwise operators with example.  **(5)**

     c.  Write a program by using '/' and '%' which takes input as number of days and prints equivalent months and days as output.  **(6)**

**Q.6**  a.  Write a program to find the number and sum of all integers greater than 100 and less than 200 that are divisible by 7.  **(7)**

     b.  Explain the following with examples:
       (i)   while statement
       (ii)  nested if ..... else statement
       (iii) continue statement  **(3×3)**

**Q.7**  a.  Write a program for finding the largest number in single-dimensional array.**(8)**

     b.  Explain (with the help of example) the purpose of following string-handling functions:
       (i)   strcmp() function          (ii)  strcpy() function
       (iii) strlen() function          (iv) strncat() function  **(2×4)**

**Q.8**  a.  Define function definition. What are the elements of function definition and how they are grouped? Explain.  **(2+8)**

     b.  Write a user defined function int Prime(int num) which returns 1 if num is prime and returns zero otherwise.  **(6)**

**Q.9**  a.  What are the benefits of using pointers in C programming language?  **(5)**

     b.  What are the different rules to be followed when performing operations on pointer variables?  **(5)**

     c.  A file named DATA contains a series of integer numbers. Write a program to read DATA and then write all 'odd' numbers to a file to be called ODD and all 'even' numbers to a file to be called EVEN.  **(6)**