

**AMIETE – ET/CS/IT (Current Scheme)**

Time: 3 Hours

**December - 2017**

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, selecting at least TWO questions from each part, 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 are themselves a collection of different data types?

- (A) string (B) structures  
(C) char (D) function

b. When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return

- (A) FAEKCDHBG (B) FAEKCDHGB  
(C) EAFKHDCBG (D) FEAKDCHBG

c. What is the output of the following program?

```
main()
{
    char string[]="Hello World";
    display(string);
}
void display(char *string)
{
    printf("%s",string);
}
```

- (A) "Hello World"  
(B) Compiler Error : Type mismatch in redeclaration of function display  
(C) Hello World  
(D) None of these

d. The statement  $i^* = 3$  is equivalent to

- (A)  $i = 3^*$  (B)  $i = i + 3$   
(C)  $i = 3$  (D)  $i = i * 3$

e. Give the output for the following code:

```
for ( ch = (int) 'd'; ch < (int) 'n'; ch += 3)
{ printf( "%c", (char) ch);
}
```

- (A) 68697071 (B) dgjm  
(C) dgdj (D) Error

- f. Which of the following statement is not correct?  
 (A) The C Program is a set of function  
 (B) The C Program execution begins with the function main().  
 (C) Each executable statement is terminated by '.'  
 (D) The comment are enclosed in '/\*...\*/'
- g. When you want to execute certain statements repeatedly, how many types of iteration statements are provided by 'C' language?  
 (A) 3 (B) 2  
 (C) 1 (D) 4
- h. Which of the following floating point is invalid?  
 (A) 0.234 (B) 2.34E-1  
 (C) .234 (D) 234E+2
- i. The postfix expression for the infix expression  $a * (b - c) / d$  is  
 (A)  $abc-*d/$  (B)  $ab-ac/d*$   
 (C)  $ab-cd/*$  (D)  $ab-ad/*$
- j. Which of the following operator can combine multiple expressions in a single expression  
 (A) Increment (B) Comma  
 (C) Bitwise (D) Ternary

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**PART (A)**

**Answer at least TWO Questions from this part. Each question carries 16 marks.**

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- Q.2** a. Write a program to add two numbers using a temporary variable. (8)  
 b. Write short note on type casting. (3)  
 c. Write a C program to read any two numbers from the keyboard and display their sum, difference and product. (5)
- Q.3** a. Differentiate break and continue with example. (10)  
 b. Write a program that will read a positive integer and print its binary equivalent. (6)
- Q.4** a. Write a program / algorithm to merge two integer arrays. Also display the merged array in reverse order. (9)  
 b. Using suitable example, differentiate between a local and global variable. (7)
- Q.5** a. What is a file? Identify & explain the various types of operations that can be performed on sequential files. (6)  
 b. Giving suitable example, explain the brief introduction of bitwise operations. (4)  
 c. Differentiate between structure and union, using suitable examples. (6)

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**PART (B)**

Answer at least TWO Questions from this part. Each question carries 16 marks.

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- Q.6** a. Explain bubble sort with a suitable program. (10)
- b. What are the various methods of defining a hash function? Explain two of them briefly. (6)
- Q.7** a. Compare the stack and queue data structure. What is the difference between FIFO and LIFO? Give any three applications of stacks and queues in System programming. (8)
- b. Write an algorithm to insert a new node at the end of a singly linked list. (8)
- Q.8** a. Define the following terms with respect to a binary tree: (8)
- (i) Degree of a node (ii) In- order traversal
- (iii) Depth of the tree (iv) Full binary tree.
- b. The implementation of a dynamic dictionary is one of the applications of a binary search tree. Discuss briefly. Write down some general comments on binary trees. (8)
- Q.9** a. What is topological sorting of a graph? Give an example to illustrate topological sort. (7)
- b. Write a C program for BFS traversal. Explain the same with the help of an example. (9)