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| JUNE 2008 |
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Code: AC05 / AT05

Subject: PROGRAMMING & PROBLEM

Time: 3 Hours

SOLVING THROUGH MARKS: 100

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.
- 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 best alternative in the following: (2x10)

a. Find the invalid identifiers from the following:-

(i) nA (ii) 2nd (iii) ROLL NO (iv) case

- (A) (i), (ii) and (iv) (B) (i) and (iii)
 (C) (ii), (iii) and (iv) (D) (ii), (i) and (iii)

b. The void type is used for

- (A) Returning the value (B) creating generic pointers
 (C) Creating functions (D) Avoid error

c. The valid octal constants from the following

(i) 0245 (ii) 0387 (iii) 04.32 (iv) -0467

- (A) (i) and (ii) (B) (iii) and (iv)
 (C) (ii) and (iii) (D) (i) and (iv)

d. The variable that are declared outside all the functions are called _____.

- (A) Local variable (B) Global variable
 (C) Auto variable (D) None of the above

e. Consider the following statements:-

int x = 6, y=8, z, w;

y = x++;

z = ++x;

The value of x,y,z by calculating the above expressions are:-

- (A) y=8, z=8, x=6 (B) y=6, x=8, z=8
 (C) y=9, z=7, x=8 (D) y=7, x=8, z=7

f. To declare an array S that holds a 5-character string, you would write

- (A) char S[5] (B) String S[5]
 (C) char S[6] (D) String S[6]

- g. The function used to read a character from a file that has been opened in read mode is
 (A) putc (B) getc
 (C) getchar (D) putchar
- h. The function that allocates requested size of bytes and returns a pointer to the first byte of the allocated space is -
 (A) realloc (B) malloc
 (C) calloc (D) none of the above
- i. The constructed datatype of C is known as
 (A) Pointers (B) String
 (C) Structure (D) Array
- j. printf(“%-10s”, “ABDUL”); displays
 / ABDULbbbbb (D) bbbbbbbbbbbABDUL
 (C)

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

- Q.2** a. Explain good characteristics of an algorithm with design issues. **(8)**
- b. Design an algorithm to generate nth member of the Fibonacci sequence. **(8)**
- Q.3** a. Write an algorithm to sort an arrays of integers using bubble sort technique. **(8)**
- b. In a company an employee is paid as under:
 (i) HRA=10% of Basic salary and DA=55% of Basic salary.
 (ii) If his Basic salary is greater than 1500 then HRA=500/- and DA=60% of Basic Salary.
 Write a C program to find Gross salary of the employee. **(8)**
- Q.4** a. What is looping? Explain and compare various looping statements available in C. **(5)**
- b. What are Multidimensional Arrays? Using multidimensional array, write a program in C to sort a list of names in alphabetical order. **(11)**
- Q.5** a. What do you understand by scope, lifetime and visibility of the variables? **(6)**
- b. Write a C program to calculate the standard deviation of an array of values. The array elements are read from the terminal. Use functions to calculate standard deviations and mean

$$\text{Standard Deviation S.D} = \sqrt{\frac{1}{n} \sum_{i=1}^n (\bar{x} - x_i)^2} \quad (10)$$

- Q.6**
- Compare the 2 constructs Arrays of structures and Arrays within structure. Explain with the help of examples. **(8)**
 - Write a C program to compare and copy the structure variables with example. **(8)**
- Q.7**
- What is dynamic memory allocation? Explain the various memory allocation function with its task. **(3)**
 - Explain pointers and structures by giving an example of pointer to structure variable? **(5)**
 - Write a C program using pointers to determine the length of a character string. **(8)**
- Q.8**
- Why a linked list is called a dynamic data structure? What are the advantages of using linked list over arrays? **(6)**
 - Write a function to delete a specified node from linked list. **(10)**
- Q.9**
- List any six commonly found programming errors in a C program. **(6)**
 - What is a macro? How is it different from a C variable name? What are the advantages of using macro definitions in a program. **(6)**
 - What are the different modes in which a file can be opened. **(4)**