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Paper Code : CS-201 (O)

BASIC COMPUTATION & PRINCIPLES OF COMPUTER PROGRAMMING

Time Allotted : 3 Hours | *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

i) What is the output of this C code ?

```
# include <stdio.h>
void main ( )
{
    double k = 0;
    for (k = 0·0; k<3·0; k++);
    printf ("%f", k);
}
```

a) 2·000000 b) 4·000000

c) 3·000000 d) None of these.

ii) Number of bytes required to store a float variable is

a) 8 bytes b) 4 bytes

c) 2 bytes d) 6 bytes.

iii) Find out the output :

```
main ( )
{
    int i = 1;
    printf ("\n%d%d%d"i, ++i, i++);
}
```

a) 331 b) 133

c) 314 d) 111.

iv) The brain of any computer system is

a) ALU b) Memory

c) CPU d) none of these.

v) Operating system is

a) Application software

b) System software

c) both (a) and (b)

d) none of these.

vi) ALU is a part of

a) memory b) CPU

c) output device d) input device.

vii) In hexadecimal number system, *D* is equivalent to the number in decimal

a) 13 b) 15

c) 14 d) 12.

viii) The purpose of mode *r* + is to

a) open for only reading

b) open for only writing

c) open for both reading and writing

d) none of these.

ix) Which is the range of unsigned short integer ?

a) 0 to 65535 b) 0 to 255

c) –128 to 127 d) None of these.

x) What will be the correct output of the following code ?

```
int x = 9;
if (10)
    printf ("%d", ++x);
else
    printf ("%d", x++);
```

a) 9 b) 10

c) 11 d) 12.

xi) A 64-bit microprocessor has the word length equal to

a) 2 bytes b) 4 bytes

c) 6 bytes d) 8 bytes.

xii) Find the right output :

```
#define CAL(x) x*x*x
void main ( )
{
    int i = 3, j;
    j = CAL (i+2)
    printf ("%d", j);
}
```

a) 125 b) 17

c) 27 d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Describe the functions of various units of a digital computer using a neat block diagram.

3. a) Write a flowchart to find the sum of the first n prime numbers, where n should be given by the user. 3

b) What is logical operator ? 2

4. a) What are the advantages of 2's complement over 1's complement ? 1

b) Perform the subtraction with the following binary numbers using 2's complement and 1's complement respectively : 2 + 2

i) 11010 – 1101

ii) 10010 – 10011.

5. a) What is the difference between Calloc( ) and Malloc( ) functions ? 3

b) What is void printer ? Give one example. 2

6. What is call by value and call by reference ? Explain with examples. 5

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Input two strings and pass them to a user defined function to compare them.

b) Write a program to input a $n \times n$ matrix and print the maximum element of the matrix. 7 + 8

8. a) Differentiate between Compiler and Interpreter. 2

b) Convert the following numbers as indicated : 6

i) Decimal 225·225 to binary

ii) Binary 11010111·110 to octal

iii) Hexadecimal 2AC5.D to binary.

c) Why is NAND gate called Universal gate ? Explain with example. 3

d) What is bit-wise operator ? 4

9. a) What is a function ? What are the advantages of using functions ? What is the purpose of return statement ? 5

b) Differentiate between while and do-while statements with suitable example. 5

c) Write a *C* function to find the square of a number and use this function in main ( ) function to evaluate $x^2 + y^2 + z^2$, where x, y, z are read through standard input device. 5

10. a) What are auto, external and static variables ? Explain their uses with suitable examples. 5

b) What is the difference between structure and union in *C* programming ? Supplement with example. 5

c) What is an array of pointers ? Explain with example. 5

. Write short notes on any *three* of the following : 3 × 5

a) Dynamic allocation of the memory

b) Bitwise Operator 5

c) Pointer Arithmetic

d) Functions of Memory unit of a Digital Computer

e) Array of Structure

f) Pointer to function and Function returning a Pointer.