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B.Sc. RNLKWC-/COMSC/COSH-MJ101T/SEM-I/24

2024

COMPUTER SCIENCE (Major)

B.Sc. First Semester End Examination - 2024

PAPER - COSH-MJ101T

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks.

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

Illustrate the answers wherever necessary.

Group - A

1. Answer any Five questions of the following : $5 \times 2 = 10$
- (i) What do you understand by scope of a variable? What is the default scope of any variable?
 - (ii) What is associativity of operators? Consider the expression $a = 5/3 * 2$. How will this expression be evaluated?
 - (iii) What are the different forms in which the signed integer (whole numbers) can be represent?
 - (iv) What is meant by operator overloading?

(Turn Over)

(2)

(v) How will you initialize a two-dimensional array
PROG[2] [5]?

(vi) Consider the following code :

```
main ( )  
{  
    int i=3, *j;  
    j=&i;  
}
```

What will be the value of *j? Explain.

(vii) What are header files and their uses? What is the difference between declaring a header file with `<` and `"` ?

(viii) Explain increment operator with a suitable example.
Which statement is efficient and why?

`x=x+1;` or `x++;`?

Group - B

Answer any four questions of the following : 4×5=20

2. Distinguish between 2nd Generation and 4th Generation computers.
3. Write a programme to add two polynomials using array. The degree of each polynomial and coefficient are to be given by the users.

(3)

4. Explain switch statement in C language. Is switch statement a replacement for if statement? Justify your answer.

5. Explain call by value and call by reference with a suitable example of each.

6. (a) Convert the binary number $(1001.10)_2$ to the following:

- (i) decimal number
- (ii) octal number
- (iii) hexadecimal number

(b) Using 2's complement subtraction method, calculate the difference between $(9)_{10}$ and $(-6)_{10}$ in binary number system.

7. Explain conditional operator. What will be the output of the statement?

`a=b>c? 12:d>e? 13:14:15;` in each of the following case:

- (i) `b=8, c=5, d=e=18`
- (ii) `b=12, c=10, d=e=5`
- (iii) `b=15, c=10, d=e=20`

Group - C

Answer any one question of the following : 1×10=10

8. (a) What is C storage class? Explain static and register storage class with suitable examples.

- (b) What is recursion? What are the essential conditions for recursion? Distinguish between recursion and iteration, giving examples. (2+3)+(1+2+2)
9. (i) Write the differences between structures and unions. Can there be structure as member of union and vice versa? 5+1
- (ii) What is the difference between calloc and malloc? 2
- (iii) How do you scan a string variable given by the user? 2