

**2022**

**COMPUTER SCIENCE — HONOURS**

**Paper : CC-2**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

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

Answer **question no. 1** and **any four** questions from the rest.

1. Answer **any five** questions : 2×5
- (a) What is a statement in C? Give an example of a ternary statement.
- (b) Suppose i is an integer variable, f is a floating point variable and c is a character variable having values 7, 5.5 and 'w' respectively :
- What are the values of the following expressions?
- (i)  $(i >= 6) \& \& (c == 'w')$
- (ii)  $(c != 'p') || (i + f) <= 10$
- (c) `int a = 6, b = 8, c;`  
`c = (a++) + (++b) + (++b);`  
What will be the values of a, b, c after the execution of the above statement?
- (d) Write down the prototypes of 'scanf()' and 'printf()' functions.
- (e) Distinguish between actual and formal parameters in C.
- (f) Is the use of goto desirable in C? Explain.
- (g) How does an append mode differ from a write mode?
- (h) Name the four different storage class specifications in C.
2. (a) Write a program in C that reads a line of text on a character by character basis, and then displays the characters in reverse order.  
Eg. Birds can fly. → ylf nac sdriB.
- (b) Illustrate with a proper example, the use of loops that contain continue statements. 6+4
3. (a) Write a program that reads in an one-dimensional character array, converts all the elements to upper case and displays the converted array. (Do not use any library function)
- (b) What is the difference between do-while( ) and while( ) statements? Explain with a suitable example. 6+4

**Please Turn Over**

4. (a) Write a function to swap the contents of two variables, using the concept of call-by-address.  
 (b) What will be the output generated by the following snippet? Explain.

```
int a, b = 0;
static int c[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 0};
for (a = 0; a < 10; ++a)
  if ((a%2)==0)b+=c[a];
printf("%d", b);
```

- (c) What is the function of the #define statement?

4+4+2

5. (a) Give an example of typecasting in C.  
 (b) Explain the following declarations :

```
float u, v;
float *pv;
```

- (c) Write a C program to print the following pattern where the number of lines given as input. For n=3 the output is given below :

```
  *
 * * *
 * * * * *
```

2+2+6

6. (a) Write a program segment in C to read an integer array and then store the odd elements in 2nd array and the even elements in 3rd array.  
 (b) Differentiate between structure and union.  
 (c) Describe two bitwise operators in brief.

5+3+2

7. (a) When are the following two functions used?

- (i) calloc(u1, u2)  
 (ii) getchar()

- (b) Define a structure named account which contains four members : an integer quantity (acc\_no), a single character (acc\_type), an 80 element character array (name[80]), and a floating-point quantity (balance). Declare two structure variables, old customer and new customer of type account. 4+6

8. (a) What is recursion? Give an example to explain it.  
 (b) Write a program in C to check whether a number is Armstrong or not.  
 (example :  $153 = 1^3 + 5^3 + 3^3$ )  
 (c) What is the use of '\t'?

4+5+1