

2023

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** from the rest.

2×5

1. Answer **any five** questions :

- What are the keywords in C? Give two examples.
- Name the four storage-class specifications included in C.
- How does an array variable differ from an ordinary variable?
- Give suitable examples of **any four** different types of operators included in C language.
- What are the functions of increment operator ++ and decrement operator --?
- What is a string constant? How does it differ from a character constant?
- State at least two advantages of using functions in a program.
- What is a pointer? How is it declared?

2. (a) Consider a C program that contains the following statements :

```
# include <stdio.h>
main( )
{
    int i;
    float x;
    char c;
    --
    --
    --
    scanf("%3d %5f %c", &i, &x, &c);
    --
    --
    --
}
```

What will be the contents of i, x and c if the following data is given as input?

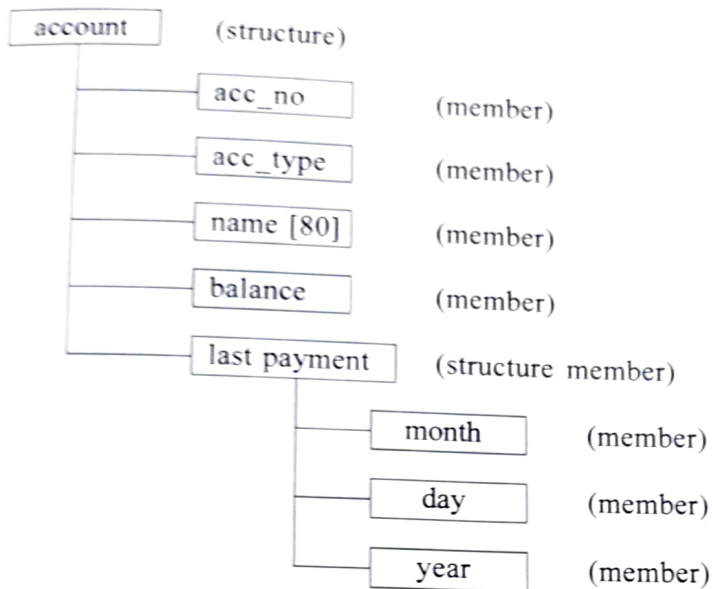
15 675.32 V

Please Turn Over

- (b) State the purpose of using 'getchar' and 'putchar' functions.
- (c) How can short integer, long integer and double-precision arguments be indicated within the control string of a 'printf' function? 3+4+3
3. (a) Write a program in C which will read a line of text given in lower case character-by-character and convert it into upper case character-by-character.
- (b) Briefly describe two types of looping used in C programs with suitable example. 6+4
4. (a) Compare the use of a switch statement with the use of nested if-else statements.
- (b) What are the purposes of break and continue statements? Explain with suitable example.
- (c) Explain what happens when the following statement is executed :
- $$\text{if } (abs(x) < x \text{ min}) \ x = (x > 0) ? x \text{ min} : -x \text{ min} \quad \text{4+4+2}$$
5. (a) Write a program segment in C that will use a loop to calculate the sum of every third integer, beginning with $i = 2$ (i.e., calculate the sum $2 + 5 + 8 + \dots$) for all the values of i that are less than 100.
- (b) What are formal and actual arguments of a function used in a C program? How are they related?
- (c) What is the purpose of a return statement? 5+3+2
6. (a) Write a program segment in C to initialize all the elements of a 2-dimensional array with a constant say 5. Consider the size of the array to be 15×20 .
- (b) What is meant by dynamic memory allocation? What library function is used to allocate memory dynamically? 5+(3+2)
7. (a) What is a structure? How does it differ from an array?
- (b) Declare the structure of a data. Now consider another structure (account) which contains the `account_no`, `account_type`, `name`, and `balance` of a customer and (`date`) as one of its members as last payment. The declaration of date precedes the declaration of account.

The composition of account is shown as follows :

4+6



8. (a) What is the primary advantage to using a data file?
(b) State the six types of `file_type`, specifications for opening a data file.
(c) Which function is used to close a data file?
(d) Write a program segment in C to find the average of all numbers stored in a data file. 1+3+1+5
-