

SASTRA DEEMED UNIVERSITY

(A University under section 3 of the UGC Act, 1956)

End Semester Examinations

February 2023

Course Code: CSE106

Course: FUNDAMENTALS OF COMPUTER SCIENCE

QP No. :U025R-1

Duration: 3 hours

Max. Marks:100

PART - A

Answer all the questions

10 x 2 =20 Marks

1. Construct an algorithm to print all odd numbers between 1 to 100.
2. Draw a flowchart to find the largest among three numbers
3. Build a C program to print the following characters (not string) in reverse order as following example
Sample Input: XYZ
Expected Output: ZYX
4. Compose a main() function in C program to convert number of days into years, weeks and days
5. Build a C program to find the sum of first 10 natural numbers
6. Design a user-defined function in a C program to swap the values of two variables
7. Define Array and list the different types of Array with their syntax
8. Distinguish the difference between structures and Unions

9. List down the different modes of file opening in C program with its utilization
10. Define file Descriptor

PART – B

Answer any Four Questions.

4 x 15 = 60 Marks

11. Build a C program to compute the sum of the two given integer values. If two values are the same, then return triple their sum using ternary operator. Write an algorithm and draw the flowchart for the same.

12. Write a C program to read an amount (integer value) and break the amount into smallest possible number of bank notes.

Note: The possible banknotes are 100, 50, 20, 10, 5, 2 and 1

13. Design functions in a C program to print the given pyramids pattern with numbers increased by 1 and characters increased by 1 as following.

1	A
2 3	B C
4 5 6	D E F
7 8 9 10	G H I J

14. a) Build a program in C to convert decimal number to binary number using the function (8)
- b) Write a program in C to check whether a number is prime or not using functions. (7)

15. Construct a C program to perform matrix multiplication using pointers.

16. Design a program in C to merge two files and write it into a new file.

PART – C

Answer the following

1 x 20= 20 Marks

17. a) Write a C program to calculate the gross salary of an employee by reading their Basic salary. Based on the basic pay, employee pay scale can be classified as S1, S2, S3 where they can be used as case labels inside switch statement to print the gross salary of an employee. (10)

Gross salary can be calculated by using the following formula:

$$\text{Gross salary} = \text{Basic pay} + \text{DA} + \text{HRA} + \text{TRA}$$

If Basic pay \geq 250000, then pay scale is S1

DA = 17% of Basic Pay

HRA = 10% Basic Pay

TRA = 25% DA

If Basic pay $<$ 25000 and Basic pay \geq 150000, then pay scale is S2

DA = 20% of Basic Pay

HRA = 25% Basic Pay

TRA = 50% DA

If Basic pay $<$ 15000, then pay scale is S3

DA = 30% of Basic Pay

HRA = 35% Basic Pay

TRA = 75% DA

- b) Build a C program to store 60 students' records using a structure called "CSE106" with members like Name, roll_no, semester, mark1, mark2, mark3, and total. Write a function to print the student details with respect to total marks (in descending order) and write the result in "Marks.txt" file. (10)
