

U.G. 1st Semester Examination - 2020**COMPUTER SCIENCE****[HONOURS]****Course Code : COM.SC-H-CC-P-101****(Programming Using C Lab)****[PRACTICAL]**

Full Marks : 75

Time : 4 Hours

Marks Distribution :

Experiment : 60 marks

Lab Notebook : 5 marks

Viva : 10 marks

Answer any **one** question.

1. Write a menu driven C program to
 - i) Check whether a number is pronic number or not. A pronic number is a number which is the product of two consecutive integers, that is, a number of the form $n(n + 1)$.
 - ii) Print Fibonacci series up to N terms.
2. Write a menu driven C program to
 - i) Find whether a pair of integers are twin prime. A twin prime is either a prime number that is 2 less or 2 more than another prime number—

for example, member of the twin prime pair (41, 43). In other words, a twin prime is a prime that has a prime gap of two.

- ii) Find factorial of a number.
3. Write a C program to input N player names and their respective scores into two single dimensional arrays. Display the player names along with their scores in ascending order of their scores.
4. Write a menu driven C program to
 - i) Check whether a multi-digit number is unique or not. A unique number will not have any repeated digits.
 - ii) Count number of factors of a given integer.
5. Write a menu driven C program to
 - i) Find the sum of series:

$$S = \frac{1}{a^2} + \frac{4}{a^5} + \frac{7}{a^8} + \dots \text{ } N \text{ th term}$$

where a and N are user inputs.

- ii) Print the following pattern considering number of rows as user input:

```

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

[Turn over]

6. Write a C program to find the multiplication of two matrices using functions. The dimension and elements of the matrices are user input.
7. Write a C program to input a text from user and convert it into Title case.
For example,
Input: funDamenTAI OF disTRIBUTED SySTeM
Output: Fundamental Of Distributed System
8. Write a C program to input user's name and convert it into following abbreviations considering input Subhash Chandra BOSE:
 - i) S. C. B.
 - ii) S. C. Bose
9. Write a C program to input user's name and convert it into following abbreviations considering input SUBHAS CHANDRA BOSE:
 - i) B. C. S.
 - ii) Bose C. S.
10. Write a menu driven C program to input a text from user and do the following:
 - i) Count number of words in the inputted text.
 - ii) Input a word and find the frequency of the word in the inputted text.

11. Write a C function to find the transpose of a matrix. Using this function write a C program to input an N×N matrix and print a matrix after subtracting the transpose of the inputted matrix from the inputted matrix.
12. Write a C program to concatenate two text files "a.txt" and "b.txt" in memory using command line arguments.
13. Design a recursive function to find the factorial of a number. Using this function write a C program to find the sum of series:

$$S = \frac{1!}{a^2} + \frac{3!}{a^4} + \frac{5!}{a^6} + \dots \text{ } N \text{ th term}$$
14. Write a menu driven C program to
 - i) Check whether a number is buzz number or not. A buzz number is the number, which either ends with 7 or is divided by 7.
 - ii) Find the GCD and LCM of two integers.
15. Write a menu driven C program to
 - i) Check whether a number is automorphic number or not. An automorphic number contains the last digits of its square. 25 is an Automorphic number as its square is 625 and 25 is present as the last two digit.
 - ii) Find the sum of digits of a multi-digit number.

16. Write a C program to input a multi-digit number and print whether the number is special number or not. A number is said to be special number if the sum of the factorial of the digits of the number is same as the original number. 145 is a special number as $1! + 4! + 5! = 1 + 24 + 120 = 145$.
17. Write a C program to concatenate two text files “*a.txt*” and “*b.txt*” in memory.
18. A circular prime number is a prime number that is also prime after shifting the first digit of the number to the end of the same number repeatedly. Ex. 197 is a circular prime number. The numbers that are formed by shifting the first digit of the numbers in a circular order are: 197, 971, and 719. They are all primes.
19. Create two text files *country.txt* and *capital.txt*. The *country.txt* file contains name of at least five countries and *capital.txt* file contains names of the corresponding capitals. Write a C program to get the output in the following form:

The Capital of India is New Delhi
and so for other.

20. Write a menu driven C program to
- i) Check whether a number is duck number or not. A number is said to be duck if the digit 0 is present in it.
 - ii) Check whether a number is Armstrong number or not. A number is said to be Armstrong number if the sum of digits raised to the power of number of digits is equal to the number. For example

$$371 = 3^3 + 7^3 + 1^3 = 371$$

$$1634 = 1^4 + 6^4 + 3^4 + 4^4 = 1634$$

21. Write a menu driven C program to
- i) Find the sum of non-diagonal elements of a square matrix.
 - ii) Check whether a string is palindrome or not without importing ‘*string.h*’.
22. Write a menu driven C program to
- i) Find whether a multi-digit number is palindrome or not.
 - ii) Find the row-wise and column-wise sum for a matrix of $M \times N$. The sum should be displayed along with the matrix.

23. Write a menu driven C program to

i) Find the sum of series:

$$S = 1 - \frac{a}{2} + 3 - \frac{a}{4} + 5 - \frac{a}{6} + \dots N \text{ th term}$$

where N as taken as input.

ii) Print the following pattern:

```
1  2  3  4  5
2  2  3  4  5
3  3  3  4  5
4  4  4  4  5
5  5  5  5  5
```

24. Write a C program to accept a multi-digit number and check whether the number is a unique number or not. A number is said to be unique if there is no repetition of digits.

Sample Input: 1231 Output: Not a Unique Number

Sample Input: 1234 Output: Unique Number.

25. Write a C program to input full name (first name, middle name and surname) from user and abbreviate in the following manner user defined function:

Surname First Letter Of First Name. First Letter Of Middle Name.

Sample Inputs

Corresponding Outputs

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Sinha R.

Subhash Chandra Bose

Bose S. C.

Mrinal Kanti Kumar Chowdhury Chowdhury M. K. K.

26. Write a C program to create a dynamic array of size 20. Input 20 repeating integers into the array from user using user defined function. Then find the occurrence of each elements in the array. For example,

Sample Array Elements:

4	5	4	9	6	5	6	9	5	9	4	5	4	9	6	5	6	9	5	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sample Output:

Occurrences of 4: 4

Occurrences of 5: 6

Occurrences of 9: 5

Occurrences of 6: 4

Occurrences of 1: 1

27. A prime number is said to be “Twisted Prime”, if the new number obtained after reversing the digits is also a prime number. Write a C program to accept

a number and check whether the number is “Twisted Prime or not”. Use user defined functions to reverse the number and another function to check whether a number is prime or not. For example,

Simple Input: 167

Output: 716

167 is a “Twisted Prime”.
