| Reg. No. | | | | | | | | | | | | | | | |
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## B.Tech./M.Tech(Integrated) DEGREE EXAMINATION, JULY 2023
### First/ Second Semester

### 21CSS101J - PROGRAMMING FOR PROBLEM SOLVING
*(For the candidates admitted from the academic year 2021-2022 & 2022-2023)*

**Note:**
(i)   **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40$^{th}$ minute.
(ii)  **Part – B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours                                                                 Max. Marks: 75

### PART – A (20 × 1 = 20Marks)
### Answer ALL Questions

| | Marks | BL | CO | PO |
|---|---|---|---|---|
| 1. What is the first step in the problem-solving process? | 1 | 1 | 1 | 1 |

1. What is the first step in the problem-solving process?
   (A) Generate potential solutions      (B) Define the problem
   (C) Implement the solution            (D) Evaluate alternatives

2. What is an algorithm?    *(1  2  1  1)*
   (A) A step-by-step procedure to solve a problem   (B) A graphical representation of a process
   (C) A programming language            (D) A flowchart symbol

3. Which of the following is NOT a characteristic of a good algorithm?    *(1  4  1  1)*
   (A) Finiteness                        (B) Determinism
   (C) Ambiguity                         (D) Feasibility

4. What is a flowchart?    *(1  2  1  1)*
   (A) A programming language            (B) A step-by-step procedure to solve a problem
   (C) A graphical representation of a process or algorithm   (D) A function in a programming language

5. Which flowchart symbol is used to represent a decision point in a process?    *(1  1  2  1)*
   (A) Rectangle                         (B) Circle
   (C) Arrow                             (D) Diamond

6. What does the scanf() function do in C?    *(1  2  2  1)*
   (A) Prints output to the console      (B) Reads input from the user
   (C) Copies one string to another      (D) Concatenates two strings

7. How do you compare two strings in C?    *(1  3  2  1)*
   (A) str1 == str2                      (B) strcmp(str1, str2)
   (C) strcomp(str1, str2)               (D) strcompare(str1, str2)

8. What will be the output of the expression 11 ^ 5?    *(1  3  2  2)*
   (A) 12                                (B) 13
   (C) 10                                (D) 11

9. What is the purpose of the strlen() function in C?     1  2  3  1
   (A) To compare two strings        (B) To concatenate two strings
   (C) To calculate the length of a  (D) To convert a string to uppercase
       string

10. Which library should be included to use the strcpy() function in C?     1  1  3  1
    (A) stdlib.h        (B) stdio.h
    (C) string.h        (D) math.h

11. What is the correct way to declare a string variable in C?     1  1  3  1
    (A) string s;       (B) char s[];
    (C) char* s;        (D) str s;

12. s = 'foobar',     1  4  3  2
    Then what is the output of s[-2]
    (A) o        (B) r
    (C) b        (D) a

13. We can combine strings and numbers by using the _____ method     1  1  4  2
    (A) combine()       (B) concat()
    (C) index()         (D) format()

14. Which formatted output value is used to print hexadecimal values?     1  1  4  2
    (A) %s        (B) %o
    (C) %h        (D) %x

15. Which string function converts a character into an integer?     1  1  4  2
    (A) len()        (B) str()
    (C) ord()        (D) char()

16. With respect to String operation, the + operator _____ the given     1  1  4  2
    strings.
    (A) Adds        (B) Concatenates
    (C) Multiplies  (D) Compares

17. _____ is used when data is in Tabular format.     1  1  5  2
    (A) NumPy        (B) Pandas
    (C) MatPlotlib   (D) Random

18. The Interface of Matplotlib used for data visualization is     1  1  5  2
    (A) Seaborn      (B) Matlab
    (C) Pyplot       (D) Pandas

19. _____ is a high level API built on TensorFlow.     1  1  5  2
    (A) PyBrain      (B) Keras
    (C) Pandas       (D) Scrapy

20. Which of the following module is to be imported to create Series?     1  1  5  2
    (A) NumPy        (B) MatPlotlib
    (C) Pandas       (D) Random

| | Marks | BL | CO | PO |
|---|---|---|---|---|

21. a. Define problem-solving and discuss the six steps involved in problem-solving.

8 2 1 2

**(OR)**

b.i. Define algorithm, and describe the characteristics of an algorithm?

4 2 1 2

ii. Mention flowchart, and discuss the symbols/shapes are commonly used in flowcharts?

4 2 1 2

22. a. Analyze the various Storage Classes in C with suitable examples.

8 4 2 2

**(OR)**

b. Explain with example ++i , i++, --i, & i--.

8 4 2 2

23. a. Describe function and its types in C? And explain recursion function with an example.

8 3 3 2

**(OR)**

b. Write a C Program to replace all VOWELS with star (*) and print the output.

8 3 3 2

24. a. Describe about the different types of data structures in python.

8 2 4 2

**(OR)**

b. Explain the significant features of the Pandas and Numpy library.

8 2 4 2

25. a. Explain function and module with suitable example.

8 2 5 2

**(OR)**

b. Explain list and tuple with suitable example.

8 2 5 2

**PART – C (1 × 15 = 15 Marks)**
Answer ANY ONE Questions

| | Marks | BL | CO | PO |
|---|---|---|---|---|

26. (i) Write a C program to calculate the sum of digits of a five digit number.

15 3 2 2

(ii) Mr. Bob has been deputed as the Election officer for the Tamil Nadu State Election. He wanted to perform an analysis to check whether a candidate is eligible for voting when he/she enters his/her age. Write a C program to read the age of a candidate and determine whether it is eligible for casting his/her own vote.

27. What is Dictionary? Explain Python dictionaries in detail discussing its operations and methods.

15 2 4 2

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