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INTERNATIONAL CENTRE FOR APPLIED SCIENCES
(MAHE, MANIPAL)
I SEMESTER B.Sc. (Applied Sciences) in Engg.
End – Semester Theory Examinations – Jan./ Feb. 2022
SUBJECT: PROBLEM SOLVING USING COMPUTERS (ICS 111)
(Branch: Common to all)

Time: 3 Hours

Date: 07 February 2022

Max. Marks: 50

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- ✓ Answer All questions.
 - ✓ Missing data, if any, may be suitably assumed.
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- 1A.** Draw flowchart to find reverse of a given number and to check whether reversed number is even or odd.
- 1B.** Write a complete C program using switch to display the appropriate grade dependent on Index, as per the following criteria:
- Index : 10 – Grade A
 - Index : 9,8 – Grade B+
 - Index : 7,6 – Grade B
 - Index : 5 – Grade C
 - Default grade is D.

(5M +5M)

- 2A.** Write a complete C program to input elements in the character array, convert this array into string and then find the number of vowel present in the string. Print the number of vowels found in the string.
- 2B.** What are the differences between entry control and exit control loop? [Write any two differences with example code and flowchart.]

(5M +5M)

- 3A.** Evaluate the code/expression, write reason in case of invalid expression:

i) (- 25) %2.0

ii) int x, y, z;
x=5;
y=10;
z= x & y - - ;
printf(“%d”,z);

iii) char a= ” 5 “;
printf(“%c”, a);

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iv)  int i;  
      if( i=10)  
        printf("%d", i);  
      else  
        printf("%d", ++i);
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3B. Write a complete C program to check whether given matrix is symmetric or non-symmetric. In case of symmetric matrix find the sum of above diagonal elements. [Hint: diagonal elements are not considered.]

(4M+6M)

4A. Illustrate bubble sort for data list {9, 5, 3, 11, 6}. Show all the steps clearly. [only snapshots, no coding]

4B. Define the following with the help of prototype and example code:

i) strcpy() ii) strcmp()

(5M + 5M)

5A. Define Student structure with name and PSUC_marks as it's data members. Create array of structure Student in main() and sort the students' record on the basis of PSUC_marks. Display the sorted records in the main().

5B. What is a pointer? What do you mean by increment operation on a pointer variable?

(6M+4M)

