

**B.TECH.**  
**(SEM I) THEORY EXAMINATION 2018-19**  
**PROGRAMMING FOR PROBLEM SOLVING**

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

Qn.	Question	Marks	CO
a.	What is the difference between compiler and Interpreter?	2	CO1
b.	What are the good characteristics of an algorithm?	2	CO1
c.	What do you mean by scope and lifetime of a variable?	2	CO1
d.	Write a recursive function in C, which takes an input from user to calculate a factorial using the recursion concept.	2	CO3
e.	How to use break statement in C? Explain with some sort of code.	2	CO3
f.	What do you mean by precedence and associativity while solving some arithmetic expressions?	2	CO1
g.	While compiling a code, write the name of two syntax and two logical errors.	2	CO2
h.	What is an array? In which situation array is advantageous over linked list?	2	CO5
i.	What is linked list? Write the self-referential structure of a node in linked list?	2	CO5
j.	Write the difference between structure and union.	2	CO5
k.	Draw the memory hierarchical structure of computer system.	2	CO1

## SECTION B

2. Attempt any *three* of the following:

a.	Explain linear search and binary search technique for searching an item in a given array. Also write the complexity for each searching technique.	10	CO4
b.	<p>A certain grade of steel is graded according to the following conditions:</p> <ul style="list-style-type: none"> <li>i. Hardness must be greater than 50</li> <li>ii. Carbon content must be less than 0.7.</li> <li>iii. Tensile strength must be less than 5600</li> </ul> <p>The grades are as follows:</p> <ul style="list-style-type: none"> <li>Grade is 10 if all the three conditions are met.</li> <li>Grade is 9 if condition (i) and (ii) are met</li> <li>Grade is 8 if condition (ii) and (iii) are met</li> <li>Grade is 7 if condition (i) and (iii) are met</li> <li>Grade is 6 if only one condition is met.</li> <li>Grade is 5 if none of the conditions are met.</li> </ul> <p>Write a program, which will require the user to give values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel.</p>	10	CO3

