Dr B R Ambedkar National Institute of Technology, Jalandhar
B Tech (CSE)
CSX – 306, System Programming (SET-A)
End Semester Examination, July 2020
Duration: 90 Minutes   Max. Marks: 30   Date: 21th July 2020

Question Number	1	2	3	4	5
Marks	6	6	6	6	6
CO No.	1	3	2	2	2
Learning Level	M	L	H	M	M

Note: **Use google classroom for submission the answer sheet: (in case of any issue mail it to kumarmohit@nitj.ac.in)**

1. Attempt all the questions.
2. Write the answers in hard copy (on A4 or any other sheet available) using blue/black pen with your name and sign on top and bottom of each page. Also put page numbers on upper right corner of each page of the answer booklet.
3. The time allowed for writing examination is 90 minutes. Extra 20 minutes are allowed for scanning and sending the answer booklet.
4. Retain the answer copy with you and submit it once the Institute reopens.
5. Follow the instructions regarding submission of answer booklet as issued by examination section.

1. Translation rules of a grammar is given below and E as the start symbol

   $$E \rightarrow E_1 \# T \ \{ \ E.value = E_1.value * T.value \ \}$$

   $$| \ T \ \{ \ E.value = T.value \ \}$$

   $$T \rightarrow T_1 \ \& \ F \ \{ T.value = T_1.value + F.value \}$$

   $$| \ F \ \{ \ T.value = F.value \ \}$$

   $$F \rightarrow num \ \{ \ F.value = num.value \ \}$$

Where start symbol is E, Draw the parse tree and calculate E.value for

the root of parse tree for the expression: 4 # 5 & 3 # 8 & 6.

2. Explain the structure of text Editor with the help of block diagram, also discuss the advantages and limitations of text Editors.

3. Calculate FIRST and FOLLOW for the given grammar and also construct LL(1) parsing table.

S->ABCDE

A->a/Є

B->b/ Є

C->c

D->d/ Є

E->e/ Є

4. If a human is considered as a computer system then which parts of the human body would be operating system, assembler, compiler, linker and loader?

5. Code is given below that uses six temporary variables i, j, k, l, m, n

```
i = 1,       j = 10,       k = 20;
l = i+j;     m = k+l;      n = k+m;
j= k+m;      m = j+n;      l = 5+m;
             return l+m
```

Calculate the minimum number of register required to execute the program without spilling where all operations are fetching their operands from registers.