Subject : SPOS	<u>**ASSIGNMENT NO – 01**</u>	**Unit : I**

1. **Define** Token, Pattern, Lexeme, string and alphabets

2. **Define system programming** & explain its **all tool** in details.
   i) Compiler   ii) Loader   iii) Editor   iv) Linker v) Debugger etc.

3. What is **interpreter**? Explain **components of interpreter**.

4. What is the **need of symbol table (ST) and literal table (LT)** in two pass assembler?

   Explain fields of ST and LT with suitable example.

5. Explain the **different assembly language statement** with examples.

6. Define **Assembler Directive**. Explain **ORGIN, EQU & LTORG** with example.

7. What is **forward reference** ? How it is handled in single pass assembler ?

8. Explain **Macro** and its advantages & how they are different from function.

9. What is **LEX tool**? Explain working of LEX with suitable diagram and example.

10. Compare **Compiler and Interpreter**. (min 6 points).

11. Explain the **machine structure** in details. (structure of CPU)

12. Difference between **Literal & Immediate operand** (Constant). How assembler handle

    them? Give example.

13. Enlist **different types of error handled by PASS- I & II assembler.**

14. Draw and explain **Algorithm & flowchart of Pass-2 of two pass assembler.**

15. Draw and explain **Algorithm & flowchart of Pass-I of two pass assembler**.

16. What are the **databases(Data Structure) used by pass-1 and pass-2** of assembler.

    Explain them with their format.

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17. Consider following Assembly code and show output of pass-1 and pass-2 of two pass assembler with entries in MOT, POT, ST, LT and BT.

```
PROG START 100
USING *,15
SR 4,4
L 1, ONE
A 1,=F'2'
ST 1,RES
RES DS 2F
ONE DC F'1'
END
```

18. Consider following assembly language code show output of pass-1 of two pass assembler.

```
START 100
READ N
MOVER B,='1'
MOVEM B,TERM
AGAIN MULT B,TERM
MOVER C,TERM
COMP C,N
BC LE,AGAIN
MOVEM B,RESULT
LTORG
PRINT RESULT
STOP
N DS 1
RESULT DS 20
TERM DS 1
END
```

19.

Consider following Assembly code and show output of pass-1 of two pass assembler with entries in MOT, POT, ST, LT and BT.   [5]

PROG START 50

USING PROG+2, 15

L 1, FIVE

A 1, = F '2'

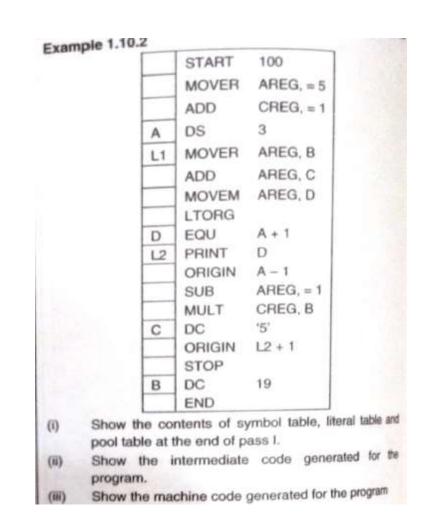LTORG

ST 1, RES

FIVE DC F '4'

RES DS IF

END

20.

Example 1.10.1

For the following assembly language code show the contents of symbol table, literal table and also generate intermediate and target code. [Assume suitable op-codes and instruction length and clearly indicate the assumptions made]

	START	1000
	READ	N
	MOVER	B, ="1"
	MOVEM	B, TERM
AGAIN	MUL	B, TERM
	MOVER	C, TERM
	COMP	C, N
	BC	LE, AGAIN
	MOVEM	B, RESULT
	LTORG	
	PRINT	RESULT
	STOP	
N	DS	1
RESULT	DS	20
TERM	DS	1
	END	

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Example 1.10.2

	START	100
	MOVER	AREG, = 5
	ADD	CREG, = 1
A	DS	3
L1	MOVER	AREG, B
	ADD	AREG, C
	MOVEM	AREG, D
	LTORG	
D	EQU	A + 1
L2	PRINT	D
	ORIGIN	A – 1
	SUB	AREG, = 1
	MULT	CREG, B
C	DC	'5'
	ORIGIN	L2 + 1
	STOP	
B	DC	19
	END	

(i)   Show the contents of symbol table, literal table and pool table at the end of pass I.

(ii)   Show the intermediate code generated for the program.

(iii)   Show the machine code generated for the program

******************* **Best of Luck** *******************