NAME :- KRUNAL RANK

ROLL NO :- U18CO081

CLASS :- B TECH 3RD YEAR
COMPUTER ENGINEERING

SEMESTER :- 6

EXAM :- MID SEMESTER EXAM

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SECTION B

Ans 1:

a) The tables that are generated at the end of Pass I are:-

Symbol Table

No.	Symbol	Address
1	A	100
2	L1	101
3	B	110
4	C	99
5	D	101
6	L2	106

Literal Table

No.	Literal	Address
1	='2'	107
2	='4'	108
~~3~~	~~='5'~~	~~112~~

Pool Table

#1

~~#~~

b) The EQU directive is used to equate a name with an expression, a symbolic address or a number. Whenever this name is used, it is replaced with the symbol.
For example,

D EQU A+1

Here D is equated to A+1. Wherever D will be used, it will be replaced with A+1.

LTORG :-
The literal pool contains a collection of anonymous constant definitions. The LTORG directive defines the start of the literal pool.

LTORG is used to assign addresses to literal pool constants.

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ORIGIN:-
The ORIGIN directive tells the assembler where to load the instructions and data into memory.
It changes the program counter value specified by the expression in the operand field.

c) DS(Data Storage):-
The DS declarative is used to assign value to a Symbol and its value is stored in memory for future usage.

It's general format is:-
Name DS ~~Value or~~ DTL 'comments'

Here D = duplication factor
T = Type Specification
L = Length of data fields

DC(Define Constants):-
DC directive is used to define initialised storage or predefined constants.
It just sets aside storage space and assigns it an initial value

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d)

Mnemonic	Address	Variant 1.
START 100	0	(AD,01) - LC=100
A DS 3	100	(DL,01) - 03
L1 MOVER AREG,B	101	(IS,01) 01 (S,03)
ADD AREG,C	102	(IS,03) 01 (S,04)
MOVEM AREG,D	103	(IS,02) 01 (S,05)
MOVER BREG,='2'	104	(IS,01) 02 (L,01)
MOVER CREG,='4'	105	(IS,01) 03 (L,02)
D EQU A+1		No code
L2 PRINT D	106	(IS,10) - (S,05)
LTORG		
='2'	107	(AD,05) - 002
='4'	108	(AD,05) - 004
ORIGIN A-1		No code (LC=99)
C DC 5	99	(DL,02) - 05
ORIGIN L2+3		No code
STOP	109	
B DC 5	110	(DL,02) - 119
END L1	111	(AD,02) - 005
='5'	112	

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Ans 2:-

1) Macro Name Table (MNT):-

Macro Name	#PP	#KP	#EV	MDTP	KPDTP	SSTP
EXAM	3	0	0	1	1	1
MATH	2	0	0	4	–	–
FIRST	1	0	0	5	–	–

Macro Definition Table (MDT):-

Label	Opcode	Operands
1	READ	(P,1)
2	ADD	(P,2), ='8'
3	PRINT	(P,3)
4	ADD	CREG, ='7'
5	MOVER	AREG, B
6	SUB	(P,5), ='16'
7	ADD	(P,5), ='7'

PNTAB
1) SS
2) OS
3) D
4) ONE
5) THOUSAND

APT for EXAM
A
B
C

APT for MATH
FIRST

APT for FIRST
BREG.

PN~~T~~

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2. The expanded code for the given Source Program is as follows:-

```
START 500
ADD CREG, ='7'        } Macro FIRST
MULT BREG, ='4'
MOVER AREG, B
SUB BREG, ='6'
ADD BREG, ='7'
PRINT D
D DS 1
READ A
ADD B, ='8'           } Macro EXAM
PRINT C
END
```