POKHARA UNIVERSITY

Semester- Spring Year: 2020

Level: Bachelor Full Marks: 70

Program: BE Pass Marks: 31.5

Course: System Programming Time : 2 hrs.

Candidates are required to give their answer in their own words as far as practicable.

The figures in the margin indicate the full marks.

Attempt all the questions.

Section A: (5×10=50)

1. What are the SIC/XE machine architecture instructions and addressing modes? Explain with reference of example.
2. Consider the following assembly language program.

Line	**Symbol**	**Opcode**	**Exp**
10	Test	START	0
20		EXTDEF	Odev
30		EXTREF	Ch, Phash
40	Begin	LDA	=C‘F’
50		+STA	Ch
60		+JSUB	Phash
70		LTORG	
80	Odev	BYTE	X’06’
90	Phash	CSECT	
100		EXTDEF	Ch
110		EXTREF	Odev
120	Loop	+TD	Odev
130		JEQ	Loop
140		LDCH	Ch
150		+WD	Odev
160		RSUB	
170	Ch	RESB	1
180		END	Begin

Mnemonic	**Opcode**
JEQ	30
JSUB	48
LDA	00
LDCH	50
STA	0C
TD	E0
WD	DC
RSUB	4C

a. Fill column for location counter
b. Create object code column with object codes
c. Show all data structures
d. Create Object code file.

3. Design one pass assembler (*either* ***load and go one pass assembler*** *or* ***usual type of one pass assembler***) for the following assembly language program.
4. Explain the concatenation of macro parameters and conditional macro expansion with reference of examples.

OR

How does program blocks and control sections make flexible in handling of source and object programs? Give reasonable example.

5. Explain the principles of object oriented programming with examples. Also explain object diagram of assembler with diagram.

Section B: (1×20=20)

6. Explain Absolute Loader and its algorithm.
   Consider the following assembly language program.

Line	**Symbol**	**Opcode**	**Exp**
10	TEST	START	3000
20	FIRST	LDA	C
30		MUL	NINE
40		DIV	FIVE
50		ADD	THIRTYTWO
60		STA	F
70	C	RESW	1
80	F	RESW	1
90	NINE	WORD	9
100	FIVE	WORD	5
110	THIRTYTWO	WORD	32
120		END	FIRST

Mnemonic	**Opcode**
LDA	00
MUL	20
DIV	24
STA	0C
ADD	18

a) Fill column for location counter
b) Create object code column with object codes
c) Create Object code file.
d) Load the program in memory