POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year	: 2021
Programme: BE		Full Marks: 100	
Course: System Programming		Pass Marks: 45	
		Time	: 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What are the types of software? Explain briefly with their importance. **4**
   b) Write about the instruction formats, addressing modes and registers of SIC/XE architecture. **7**
   c) Identify the addressing mode and target address if the instruction is 012030.[PC=2000, B=5030, X= 3000]. **4**

2. a) Discuss the roles of data structures OPTAB, SYMTAB, LOCCTR. **5**
   b) Consider the following assembly language program. **10**

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

   i. Fill column for location counter
   ii. Create object code column with object codes
   iii. Show all data structures
   iv. Create Object code file.

3. a) What is the format of the Object Program generated by the assembler? What are the assembler directives and assembler data structures? Explain very briefly. **8**
   b) What is the use of the load and go assembler? Illustrate with example. **7**

4. Consider the following assembly language program. **15**

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

5. a) What is macro definition and macro data structures? Explain the concept of concatenation of macro parameters briefly.   7

   b) Explain conditional macro expansion.   8

6. a) Explain the object diagram for assembler with diagram.   5

   b) What is object oriented programming? Write about principles of object oriented programming.   5

   c) Define Booch's Micro and Macro process activities.   5

7. Write short notes on: (**Any two**)   2×5
   a) Risc vs Cisc
   b) Conditional macro expansion
   c) Dynamic Linking