POKHARA UNIVERSITY

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

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 is system software and application software 5
   b) Describe the architectures of SIC and SIC/XE machines. 10
2. a) What are the basic functions of an assembler? What is the simple format of the object program generated by the assembler? 7
   b) Explain load-and go assembler with example. 8
3. a) Consider the following assembly language program 12

Mnemonic	Opcode
CLEAR	B4
LDT	74
TD	E0
JEQ	30
TIXR	B8
JLT	38
RSUB	4C
WD	DC
LDCH	50

Line	Symbol	Opcode	Exp
10	WRREC	START	105D
20		CLEAR	X
30		LDT	LENGTH
40	WLOOP	TD	OUTPUT
50		JEQ	WLOOP
60		+LDCH	BUFFER,X
70		WD	OUTPUT
80		TIXR	T
90		JLT	WLOOP

100		RSUB	
110	OUTPUT	BYTE	X'05'
120	BUFFER	RESB	400
130	LENGTH	RESB	2
140		END	WRREC

i) Fill the column for the location counter.
ii) Create an object code column with object code. 8
iii) Create an object file.
iv) Load the program into memory.

b) Write short notes on the machine independent assemblers features such as literals and program linking.

4. a) What is loader? Differentiate linking loader from linkage editors. 7
b) Give working mechanism of the absolute loader with the algorithm. 7

5. a) What is macro time variable? How macro processor manages value of macro time variable? 5
b) Write about concatenation of macro parameters with example. 5
c) Consider the macro definition given below and show macro expansion for the macro call statement "Print 54 F2". Show all data structures used by macro processor clearly. 5

Print	MACRO	&Ch, &Od
$Repeat	TD	&Od
	JEQ	$Repeat
	LDCH	#&Ch
	WD	&Od
	MEND	

6. a) Define Booch's Micro and Macro process activities. 5
b) Explain object diagram for the assembler. 6

7. Write short notes on: **(Any two)** 2×5
a) Dynamic Linking
b) Principle of OOP.
c) Macro Expansion.