Level: Bachelor

Semester: Spring

: 2023

Programme: BE

3.

Course: System Programming

Full Marks: 100 Pass Marks: 45

Time

Year

: 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,

Explain the architectures of the SIC and SIC/XE machines with 10 a) 1. important features. 5 Write a SIC program for arithmetic operations. b) 7 How is the forward reference handled in the one pass assembler? 3) 2. 8 Explain machine dependent assembler features. (d) 10 Consider the following assembly language program.

Symbol	Opcode -	Exp
Test		0
	EXTDEF	Odev
	EXTREF	Ch, Phash
Regin	LDA	=C'A'
- Bogin	+STA	Ch
	+JSUB	Phash
		X'06'
Phasn		Ch
		Odev
		Odev
Loop		Loop
		Ch
	THE RESERVE OF THE PERSON NAMED IN	Odev
	The second secon	
		10
Ch		Begin
	END	2.6
	Begin Odev Phash Loop	Test START EXTDEF EXTREF  Begin LDA +STA +JSUB LTORG Odev BYTE CSECT EXTREF  EXTREF  Loop +TD JEQ LDCH +WD RSUB

Mnemonic	Opcode
A COLUMN TO THE OWNER OF THE OWNER OWNER OF THE OWNER OWN	30
JEQ JSUB	48
	00
LDA LDCH	50
	0C
STA TD	E0 ·
WD	DC
RSUB	4C

- Fill column for location counter. i.
- Create object code column with object codes ii.
- Show all data structures 111.
- Create Object code file. iv.
- b) What is absolute loader? Explain with proper algorithm.

Consider the following assembly language program.

Line	Symbol	Opcode	Exp
10	TEST	START	2050
20	FIRST	LDA	P
30	- 3.09E.M.	MUL	RATE
40		MUL	TIME
50		DIV	HUNDRED
60		STA	SI
70	P	RESW	1
80	RATE	RESW	I.
90	TIME	RESW -	1
100	HUNDRED	WORD	100
110	SI	RESW	1
120		END	FIRST

Mnemonic	Opcode
LDA	00
MUL	20
DIV	24
STA	0C

- Fill column for location counter i.
- ii. Create object code column with object codes
- Create Object code file. iii.
- iv. Load the program in memory
- 5. a) What is macro time variable? How macro processor manages value of macro time variable?
  - b) Explain Concatenation of macro parameters.
  - c) Explain conditional macro expansion.

a) Explain the Object diagram for assembler with diagram. What is the object oriented programming? Write about the principles	7
biect oriented programming.	0
tart notes on (Any (110)	2×5
bisc. alcinicotars.	
Multipass assembler.	
c) Generation of unique labels	

Level: Bachelor

Semester: Spring

Programme: BE

Course: System Programming

Year

: 2021

Full Marks: 100

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.

What is system software and application software
 Describe the architectures of SIC and SIC/XE machines.

 What are the basic functions of an assembler? What is the simple format of the object program generated by the assembler?
 Explain load-and go assembler with example.

 Consider the following assembly language program.

3. a) Consider the following assembly language program

1	1			
	•			

Mnemonic	Opcode
CLEAR	В4
LDT	74
TD	E0
JĘQ	30
TIXR	B8
JLT .	38
RSUB	4C
WD	DC
LDCH	50

Line	Symbol	Opcode	Exp
10	WRREC	START	105D
20	1	CLEAR	x
30		LDT	LENGTH
40	WLOOP	TD	OUTPUT
	WLOOI	JEQ	WLOOP
50		+LDCH	BUFFER,X
60		WD	OUTPUT
70		TIXR	Т
80		JLT	WLOOP
90		PLI	

RSUB	The state of the s
BYTE	THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, OF THE OWNER, OW
The second secon	X,02.
The second second second second second	100
END	2 WRREC
	BYTE RESB RESB

- i) Fill the column for the location counter.
- ii) Create an object code column with object code.
- iii) Create an object file.
- iv) Load the program into memory.
- b) Write short notes on the machine independent assemblers features such
- What is loader? Differentiate linking loader from linkage editors. 4. h)
  - Give working mechanism of the absolute loader with the algorithm.
- What is macro time variable? How macro processor manages value of 5 b)
  - Write about concatenation of macro parameters with example.
  - Consider the macro definition given below and show macro expansion c) for the macro call statement "Print 54 F2". Show all data structures used by macro processor clearly.

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

- Define Booch's Micro and Macro process activities.
  - Explain object diagram for the assembler.
- Write short notes on: (Any two)
  - a) Dynamic Linking
  - b) Principle of OOP.
  - Macro Expansion.

8

7 .

Pass Marks: 45

Time : 3hrs.

7

5

10

Candidates are required to give their answers in their own words as far  $_{\emptyset}$  practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

What are the types of software? Explain briefly with their importance.

Write about the instruction formats, addressing modes and registers of

SIC/XE architecture.

c) Identify the addressing mode and target address if the instruction is 012030.[ PC=2000, B=5030, X=3000].

a) Discuss the roles of data structures OPTAB, SYMTAB, LOCCTR.

b) 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	- Lines	EXTDEF	Ch
110		EXTREF	Odev
120	Loop	+TD	Odev
130	2004	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.
  - b) What is the use of the load and go assembler? Illustrate with example.

Consider the following assembly language program.

Line	Symbol	Opcode	Exp
10	TEST	START	3000
20	FIRST	LDA	С
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	

7

٠.	Fill column for location counter	
a)	Create object code column with a line	
b) -	Create Object code file.	
c)	Load the program in memory	
d)	What is macro definition and	
a)	What is macro definition and macro data structures? Explain the concept	7
	of correction of macro parameters briefly	
b)	Explain conditional macro expansion.	8
a)	Explain the object diagram for assembler with diagram.	5
b)	What is object oriented programming? Write about principles of object	5
	oriented programming.	
c)	Define Booch's Micro and Macro process activities.	5
	rite short notes on: (Any two)	2×5
a)	Risc vs Cisc	
b)	Conditional macro expansion	
c)	Domanda Linking	

Level: Bachelor

Semester:Fall

Year : 2020

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.

Write about instruction formats and addressing modes of SIC/XE. Identify the addressing mode and target address if the instruction is 012030 {PC=2000, B=5030, X=3000}

7

b) Explain VAX and UltraSPARC Architecture. Write a SIC/XE Program for arithmetic operations.

8

a) Discuss the roles of data structures OPTAB, SYMTAB, LOCCTR.

5

b) Consider the following assembly language n.

Citic	Symbol	Opcode	Exp
10	Test	START	0
20		EXTDEF	Odev
30		EXTREF	Ch, Phash
40	Begin	LDA	=C'#'
50		+STA	Ch
60		+JSUB	Phash
70		LTORG	- I Hash
80	Odev	BYTE	X'06'
90	Phash	CSECT	X 00
100		· EXTDEF	Ch
110		EXTREF	
120	Loop	+TD	Odev
130		JEQ	Odev
140			Loop
150		LDCH	Ch
60		+WD	Odev
70	Ch	RSUB	
80	CII	RESB	1
		END	Begin

- Lo	Opcode
Mnemonic	30
JIQ	48
JSUB	00
LDA	50
LDCH	0C
STA	EO
1D	DC
WD	4C
RSUB	40

- a) Fill column for location counter
- b) Create object code column with object codes
- Show all data structures c)
- Create Object code file
- the following assembly language a) Consider program.

Mnemonic	Opcode
LDCH	50
LDX	04
STCH	54
JLT	38
TIX	2C

Line	Symbol	Opcode	Exp
10	STRCPY	START	1000
20	FIRST	LDX	ZERO
30	MOVECH	LDCH	STR1,X
40	1110111111	STCH	STR2,X
50		TIX	ELEVEN
60	-	JLT	MOVECH
70	STRI	BYTE	C'ABCD'
80	STR2	RESB	11
90	ZERO	WORD	0
100	ELEVEN	WORD	11
110		END	FIRST

- i) Fill column for location counter
- ii) Create object code column with object codes
- iii) Create Object code file.
- iv) Load the program in memory

b) Write about program blocks and control section.

10 a) What is macro definition and conditional macro expansion? Explain with Example.

b) 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.

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

a) Explain the interaction diagram for assembler with diagram.

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

a) Define Booch's Micro and Macro process activities.

b) Differentiate linking loader from linkage editors.

7
Write short notes on: (Any two)

a) Absolute Loader and its algorithm

b) Concatenation of macro parameters

Level: Bachelor Semester: Spring
Programme: BE
Course: System Programming
Year : 2019
Full Marks: 100
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.

		then the telestate the telesta	7
1.	a)	Write about instruction formats and addressing modes of SIC/XE.  Identify the addressing mode and target address if the instruction is	
		Liantity the additioning most the	4
		012030 {PC=2000, B=5030, X=3000} Explain the importance of system software. How it differs from	
	b)	Explain the importance of system sources	4
	$G_{j}$		
		Explain VAX, RISC and CISC architecture.  Explain VAX, RISC and CISC architecture? Which one do you prefer	5
	c)	Explain VAA, Idea and Multi-pass Assembler? Which one	
2.	a)	Explain VAX, RISC and CISC architecture.  Explain VAX, RISC and CISC architecture.  What is one-pass and Multi-pass Assembler? Which one do you prefer  while designing an assembler? Justify your answer.  while designing an assembly language program.	10
		while designing an assembly language program.	

b) Consider the following assembly language program.

and the same of th	Symbol	Opcode	The second secon
Line		START	0
10	Test	EXTDEF	Odev
20		EXTREF	Ch, Phash
30		LDA	=C'#'
40	Begin	+STA	Ch
50		+JSUB	Phash
60		LTORG	
70		BYTE	X'06'
80	Odev	CSECT	
90	Phash	EXTDEF	Ch
100		EXTREF	Odev
110		+TD	Odev
120	Loop	JEQ	Loop
130		LDCH	Ch
140		+WD	Odev
150		RSUB	
160		RESB	1
170	Ch	END	Begin
180		Elvis	

	Opcode
Mnemonic	30
JEQ	48
JSUB	00
LDA	30
LDCH	OC E0
STA	DC
WD	4C
RSUB	
	ion counter codes

Fill column for location counter Create object code column with object codes i.

Show all data structures ii.

Create Object code file. iii.

Explain literal and its handling in pass 1 and pass 2 Consider the following assembly language program.

Lin	Symbol	Opcode	Exp
e		START	1000
10	STRCPY	LDX	ZERO
20	FIRST MOVECH	LDCH	STR1,X
30	MOVECH	STCH	STR2,X
40		TIX	ELEVEN
60		JLT	MOVECH
70	STR1	BYTE	C'ABCD'
80	STR2	RESB	11
90	ZERO	WORD	0
100	ELEVEN	WORD	11
110		END	FIRST

Mnemonic	Opcode
LDCH	50
LDX	04
STCH	54
JLT	38
TIX	2C

i. Fill column for location counter

ii. Create object code column with object codes

Create Object code file. iii.

Load the program in memory

a) What is Macro definition and Expansion? Explain with Example.

5

5

15

Consider the macro definition given below and show macro expansion b) for the macro call statement "Display 69 F8". Show all data structures 5 used by macro processor clearly

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

Explain Machine independent Macro processors Features. c)

Explain the interaction diagram for assembler with diagram. a) 5. What is object oriented programming? Write about principles of 7 **b**) object oriented programming. Define Booch's Micro and Macro process activities. 5 a) 5 Differentiate linking loader from linkage editors. 6. b)  $2 \times 5$ 

Write short notes on: (Any two)

- Absolute Loader and its algorithm a)
- Conditional macro expansion b)
- Dynamic Linking c)

Level: Bachelor Programme: BE

Course: System Programming Semester: Fall

Year

: 2019

7

8

Candidates are required to give their answers in their own words as far The figures in the margin indicate full marks. Attempt all the questions,

a) Write about instruction formats and addressing modes of SIC/XE. Identify the addressing mode and target address if the instruction is 012030

b) Explain VAX and UltraSPARC Architecture. Write a SIC/XE Program

a) Explain the basic assembler concept highlighting the machine dependent and machine independent features.

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'#'
50		+STA	Ch
60		+JSUB	Phash
70		LTORG	
80	Odev	BYTE	X'06'
90	Phash	CSECT	
100	1 Husti	EXTDEF	Ch
110		EXTREF	Odev
120	Lan	+TD	Odev
130	Loop	JEQ	Loop
140		LDCH	Ch
150		+WD	Odev
160		RSUB	The second second second second second
170		RESB	
180	Ch	END	Begin

	Opcode
z -monic	30
Mnemonic JEQ	48
JSUB	00
LDA	50
LDCH	0C
STA	E0 .
TD	DC
WD	4C
RSUB	
alumn for location counte	er .

- Fill column for location counter
- ii) Create object code column with object codes
- iii) Show all data structures
- iv) Create Object code file.
- Consider the following assembly language program.

Y in a	Symbol	Opcode	Exp
Line	STRCPY	START	1000
10	The second secon	LDX	ZERO
20	FIRST	LDCH	STR1,X
30	MOVECH	STCH	STR2,X
40	San	The state of the s	ELEVEN
50	المستعدد المالة	TIX	MOVECH
60		JLT	C'ABCD'
70	STR1	BYTE	CABCE
80	STR2	RESB	11
90	ZERO	WORD	0
100	ELEVEN	WORD	11
110	BELLVER	END	FIRST

Mnemonic	Opcode
LDCH	50
LDX	04
STCH	54
Sec. (1777)	38
JLT	2C
TIX	

- Fill column for location counter
- Create object code column with object codes ii.)
- iii.) Create Object code file.
- iv.) Load the program in memory

Level: Bachelor

Semester: Spring

Year : 2018

Programme: BE

Course: System Programming

Full Marks: 100 Pass Marks: 45

: 3hrs. Time

10

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.

What is system software? Explain its importance. 5 a) Describe the architectures of SIC and SIC/XE machines. 10 b) What is the advantage of relative addressing mode over absolute 5 a) addressing mode?

Consider the following assembly language program. b)

Line	Symbol	Opcode	Exp
10	Test	START	0
20		EXTDEF	Odev
30		EXTREF	Ch, Phash
40	Begin	LDA	=C,#,
50	Bogin	+STA	Ch
		·+JSUB	Phash
60		LTORG	
70	Odev	BYTE	X'06'
80	Phash	CSECT	
90	Filasii	EXTDEF	Ch
100		EXTREF	Odev
110	- I aan	+TD	Odev
120	Loop	JEQ	Loop
130		LDCH	Ch
140		+WD	Odev
150		RSUB	
160 ·			
170	Ch	RESB	Begin
180		END	Degin

Mnemonic	Opcode
JEQ	30
JSUB	48
LDA	00
LDCH	50
CTA	0C
SIA	E0
10	DC
WD	4C
RSUB for location count	er

- Fill column for location counter
- ii. Create object code column with object codes
- Show all data structures
- iv. Create Object code file.
- What is loader? Differentiate linking loader from linkage editors. 3.
  - What is relocation? How relocation is carried out in a loader? a)
- What is macro time variable? How macro processor manages value of b) a) 4. macro time variable?
  - Write about concatenation of macro parameters with example.
  - Consider the macro definition given below and show macro expansion b) for the macro call statement "Print 54 F2". Show all data structures c) used by macro processor clearly.

sed by macro p	MACRO	&Ch, &Od
Print		&Od
Repeat	TD	\$Repeat
	JEQ	#&Ch
	LDCH	&Od
	WD	a Ou
	MEND	er with diagram.

- Explain the object diagram for assembler with diagram. 5. a)
  - What is object oriented programming? Write about principles of b) object oriented programming.
- Define Booch's Micro and Macro process activities. 6.
  - Explain load and go assembler
  - What is Literal? Explain its handling during pass 1 and pass 2.  $2 \times 5$
- Write short notes on: (Any two)
  - a) Absolute Loader and its algorithm
  - b) Conditional Macro Expansion
  - c) Dynamic Linking

2+5

5

8

5

5

: 2018 Level: Bachelor Year Semester: Fall Full Marks: 100 Programme: BE Pass Marks: 45 Course: System Programming : 3hrs. Time

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.

What is system software? Explain its importance. 1. a) Describe the architecture of SIC/XE machine. b) Differentiate RISC and CISC architectures. c) How forward references are handled in one pass assembler? 10 a) 2.

-		g assembly language Opcode	Exp
ine	Symbol	START	0
0	Test	LDA	#5
0	FIRST		THREE
0		STX	=C'EOF'
		LDX	THREE
0		+LDS	
0		ADDR	A,X
0		+STA	RESULT,X
0			1
0	RESULT	RESW	
	THREE	RESW	FIRST
0	TITICOL	END	FIRST
00		Oncode	

)	
Mnemonic	Opcode
And in case of the last of the	00
LDA	10
STX	
LDX	04
THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	6c
LDS	90
ADDR	
STA	OC .

- Fill column for location counter i.
- Create object code column with object codes 11.
- Show all data structures 111.
- Create Object Program.
- Write about program blocks and control sections.

5

5

5

5

b) Consider the following assembly language program.

Line	Symbol	Opcode	5000
10	SUM	START	ZERO
20	FIRST	LDX	ZERO
30		LDA	TABLE,X
40	LOOP	ADD	COUNT
50		TIX	LOOP
60		JLT	TOTAL
70		STA	101/10
80		RSUB	2000
90	TABLE	RESW	2000
100	COUNT	RESW	
110	ZERO	WORD	0
120	TOTAL	RESW	1
130		END	FIRST

Mnemonic Opcode

LDA 00
ADD 18
LDX 04
STA 0C
JLT 38
TIX 2C
RSUB 4C

- i. Fill column for location counter
- ii. Create object code column with object codes
- iii. Create Object code file.
- iv. Load the program in memory
- 4. a) What is macro time variable? How macro processor manages value of macro time variable?
  - Explain conditional macro expansion.

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.

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

5

	a) Explain the Object diagram for assembler with diagram. b) What is object oriented programming a semiliar and	
).	oriented programming. Write about principles of object	7
<b>5</b> .	Define two different development process	8
	b) What is Absolute Loader? Write its algorithm. Write short notes on: (Any two)	7
	a) Dynamic Linking	2×:
	b) Recursive microprocessor	
	c) Simple Bootstrap Loader	

Level: Bachelor Programme: BE

Semester: Spring

Year : 2017

Course: System Programming

Full Marks: 100 Pass Marks: 45

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

The figures in the margin indicate full marks.

Attempt all the questions.

1.	a)	What is system software? Explain its importance.	
	b)	Describe the architectures of SIC and SIC/XE machines.  What is the advantage of salari	•
,	a)	What is the advantage of relational SIC/XE machines.	10

What is the advantage of relative addressing mode over absolute a) 2. 10 addressing mode? 5

Consider the following assembly language program. **b**) 10

Line	Symbol	Opcode	Exp
10	Test	START	0
20		EXTDEF	Odev
30		EXTREF	Ch, Phash
40	Begin	LDA	=C'#'
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
	Loop	JEQ	Loop
130		LDCH	Ch
140		+WD.	Odev
50		RSUB	
60		The same and the s	1
70	Ch	RESB	Begin
80		END	

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
- c) What is Literal? Explain its handling during pass 1 and pass 2.

  3. a) What is loader? Differentiate linking loader from linkage editors.

  b) What is relocation? How relocation is carried out in a loader?

  8
- b) What is relocation? How relocation is carried out in a loader?

  4. a) What is macro time variable? How macro processor manages value of macro time variable?
  - b) Write about concatenation of macro parameters with example.

    5
    Consider the macro definition given below and show macro expansion
  - 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.

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

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

  8
  - b) What is object oriented programming? Write about principles of object oriented programming.
- 6. a) Define Booch's Micro and Macro process activities.
  - b) Explain load and go assembler.
- 7. Write short notes on: (Any two)
  - a) Absolute Loader and its algorithm
  - b) Conditional Macro Expansion
  - c) Dynamic Linking

: 2016 Year Semester: Fall Full Marks: 100 Level: Bachelor Pass Marks: 45 programme: BE Course: System Programming : 3hrs. Time

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.

	Define system software. Briefly explain machine dependent and	3
	Lant parts Of System Co.	5
þ)	Explain about the SIC/XE architecture.  Explain about Data format and addressing modes of Power PC  Write about Data format and addressing modes of Power PC	5
a)	Architecture.  How forward references are handled in one pass assembler?  Consider the following assembly language program.	5 10

	Symbol	Opcode	Exp
Line		START	1000
10	STRCPY		ZERO
20	FIRST	LDX	STR1,X
30	MOVECH	LDCH	
		STCH	STR2,X
40		TIX	ELEVEN
50		ILT	MOVECH
60		BYTE	C'ABCD'
70	STR1		11
80	STR2	RESB	
90	ZERO	WORD	0
	ELEVEN	WORD	11
100		END	FIRST
110			

Mnemonic	Opcode
LDCH	50
LDX	04
STCH	54
JLT	38
TIX	2C

- Fill column for location counter i.
- Create object code column with object codes ii.
- Show all data structures iii.
- Create Object code file iv.
- Write about program blocks and control sections. c)
- What is relocation? How relocation is carried out in a loader? 3. a) What are the main features of machine dependent loader when logically related parts of programming are linked then what is

5

8

generated and why it is important?

- What is macro time variable? How macro processor manages value of macro time variable?
  - b) Write about concatenation of macro parameters with example.
  - 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.

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

- 5. a) Define object oriented programming and write about its principles.
  - b) Show the relationship between classes with example in Object Oriented Programming. Also show the Object diagram for assembler.
- 6. a) Define Booch's Micro and Macro process activities.
  - b) Briefly explain load and go assembler.
- 7. Write short notes on: (Any two)
  - a) Simple Bootstrap Loader
  - b) MASM macro processor
  - c) MS-DOS linker

Level: Bachelor Semester: Fall Year : 2015 Programme: BE Full Marks: 100 Pass Marks: 45 Course: System Programming

: 3hrs. Time

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.

10 Explain the architecture of SIC/XE machine. Write a SIC Program to find the sum of two numbers and save the a) 5 b) result in Sum variable. 6

How does machine-dependent assembler distinguish by machineindependent assembler? Write and explain about one pass assembler a)

Generate the object code and necessary data structure for each b) statement in the following code.

STTD	START	2000
INPOUT	LDA	ZERO
INLOCP	TD	INDEV
THEODY	JEQ	INDOOP
	RD	INDEA
	STCH	DATA
	TD	OUTDEV
OUTLP	JEC	OUTLE
	LOCH	DATA
	WD	OUTBEV
01.00	STYG	X.0.
ZERO		Y'Fi'

INDEV

3.

b)

c)

CULDEA

Mnemonic	Opcode
LDA	00
TD	EO
JEQ	30
RD RD	D8
STCH	54
LDCH	50
WD	DC

Why loader is essential for system software? Differentiate loader with 8 linker? Define the basic function of loader. a) What are the loader design options? Briefly explain any two of them. 7 What is necessity of macro processors in programming languages? 8 b) Explain how unique labels are generated within macro expansion? a) How is conditional macro expansion implemented? Explain with 7 b) suitable examples. 5 Briefly explain about program blocks. 5. a) 5 Briefly explain the loader options.

Briefly explain the general purpose macro processors? 1 '

5

- a) Define object diagram. Identify possible objects and draw the object diagram for two pass assembler.
  - b) What do you mean by object oriented designing? Briefly explain the two different development processes suggested by Booch.
  - . Write short notes on: (Any two)
    - a) MASM Assembler
    - b) SUNOS linker
    - c) ANSI C macro Language

8

2×5