

B.E. (Information Technology) Fifth Semester (C.B.S.)
System Programming

P. Pages : 3

Time : Three Hours



NRT/KS/19/3438

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Draw and explain general machine structure. **6**
b) Differentiate between – **8**
 - i) Open subroutine and closed subroutine.
 - ii) Multitasking and multiprocessing.
 - iii) Compiler and Interpreter.
 - iv) BALR and USING.

OR

2. a) Explain various instruction formats of IBM 360. **6**
b) What are advantages and disadvantages of base-offset addressing scheme over direct addressing scheme? **4**
c) What are the functions of operating system? **4**
3. a) What are the databases used in pass-1 of assembler? Explain formats of each. **7**
b) Why assembler needs two passes over the source program? What will be the limitations if one want to have one-pass assembler? How problem of forward reference is handled in one pass assembler. **6**

OR

4. a) Show variable table entries and generated machine code for the following assembly language program. 7

SIMPLE	START	0
	BALR	15, 0
LOOP	L	R1, TEN
	A	R1, =F' 2'
	ST	R1, RESULT
	CL1	RESULT, 14
	BNE	LOOP
	BR	14
	LTORG	
R1	EQU	1
TEN	DC	F' 10'
RESULT	DS	F
	END	

- b) Use bucket sort for sorting following data set. 6
 319, 216, 424, 836, 012, 157, 211, 500, 208
 How many buckets will be required, if we want to sort name of months abbreviated in 3 letters Jan, Feb, Mar etc.

5. a) What are the facilities provided by macro processor? What is the necessity of stack in macro call within macros? 7
 b) Explain the formats of MNT, MDT and macro call argument list array. 6

OR

6. For the following program show : 13
 i) Expanded assembly language program.
 ii) MDT after macro processing.
 iii) MNT after processing

MACRO	
XYZ	&A
ST	1, &A
MEND	
MACRO	
MIT	&Z
MACRO	
&Z	&W
AR	4, &W
XYZ	ALL
MEND	
ST	&Z, ALL
MEND	
PROG	
	START
	USING
	MIT
	ST
	HELLO
	2, 3
	YALE
YALE	EQU
ALL	5
	DC
	f' 3'
	END

7. a) Explain the four functions to be performed by loader. 6
 b) What are advantages and disadvantages of relocating loader. 4
 c) Explain following types of address constants 3
 i) Absolute
 ii) Simple relocatable
 iii) Complex relocatable

OR

8. a) In two-pass direct linking loader, what is the function of pass – 1 and pass – 2. 6
 b) Describe the function of each of the RLD, ESD, TXT, and END card. 7
 9. a) What is the role of a compiler? How source program is translated into object program by compiler. Explain each step. 8
 b) Explain format of LEX tool with an example. 5

OR

10. a) What are different parameter passing mechanisms. 8
 b) What are compiler writing tools? 5
 11. a) Explain the need of device driver for any O.S. 7
 b) Explain various steps required for installation of device driver. 7

OR

12. a) What are different types of device driver? 7
 b) Explain with example, the flow of control between an user program, the Kernel, the device driver and the hardware. 7
