Total number of printed pages-3

53 (IT 404) SYPR

### 2021

### SYSTEM PROGRAMMING

Paper: IT 404

Full Marks: 100

Time: Three hours

# The figures in the margin indicate full marks for the questions.

Answer any five questions.

1. (i) Answer in short:

 $3 \times 5 = 15$ 

- (a) Identify the components of the Instruction: A1, 901 (2, 15)
- (b) Consider the value of register 5 is 1000. Calculate the address of storage operand for the given instruction:

0101	1010	0011	000	0101	0000	0001	0000
------	------	------	-----	------	------	------	------

- (c) What do you mean by Mnemonic, give example?
- (d) What do you mean by Symbol Table?

Contd.

- (e) What are the roles of Location Counter (LC) and Instruction Register (IR)?
- (ii) Discuss the various data formats available in 360 structure. 5
- 2. (i) Discuss the general machine structure of a conventional computer system considering IBM 360 structure. 10
  - (ii) Illustrate with micro flowchart, the sequence of hardware operations performed to execute in instruction ADD 2, L76 in IBM 360 structure.

10

- 3. (i) Define the functionalities of an assembler. Discuss the role of symbol table and base table considering all fields.
  - (ii) Show the intermediate steps in a twopass assembler to assemble the following program:

for /s	START	0.0
	USING	
81	L	1, Five
	OOW 1010   OC	1, Four
7/	ST	1, TEMP
our	DC	F'4'
rive	DC	F'5'
EMP	DS oy ob	ted/IF (b)
	END	

53 (IT 404) SYPR/G

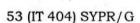
- Discuss various Basic Instruction Formats available in 360 structure with proper examples.
  - Define Memory, Registers, Data, (ii) Instruction and Operational Code. 2×5=10

- 5. What is a Loader? Discuss the (i) functionalities of Absolute Loader and Relocating Loader with suitable examples. 10
  - Discuss with suitable example, how arguments in MACRO provides more flexibility in assembly language program than basic MACRO.
- Write short notes on: (any four) 6.

5×4=20

NL LIBRARY

- Linker (i)
- (ii) **MACRO**
- (iii) Compiler
- Compile-and-go loader
- Operating System.



Total number of printed pages-3

53 (IT 404) SYPR

#### 2021

## SYSTEM PROGRAMMING

Paper: IT 404

Full Marks: 100

Time: Three hours

# The figures in the margin indicate full marks for the questions.

Answer any five questions.

- 1. (i) Answer in short:  $3\times 5=15$ 
  - (a) Identify the components of the Instruction: A1, 901 (2, 15)
  - (b) Consider the value of register 5 is 1000. Calculate the address of storage operand for the given instruction:

10965223669	100000000000000000000000000000000000000	(48 CS 2 F F F F	AND UNION	REPRESENTED TO		2452234-3334	92.5-250-25-5.71
0101	1010	0011	000	0101	0000	0001	0000
(CERTAINS)			1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12/17/17/25 (I	. A (7) (5) (5) (5)	120000000000000000000000000000000000000	

- (c) What do you mean by Mnemonic, give example?
- (d) What do you mean by Symbol Table?

Contd.

- (e) What are the roles of Location Counter (LC) and Instruction Register (IR)?
- Discuss the various data formats available in 360 structure.
- 2. (i) Discuss the general machine structure of a conventional computer system considering IBM 360 structure. 10
  - (ii) Illustrate with micro flowchart, the sequence of hardware operations performed to execute in instruction ADD 2, L76 in IBM 360 structure.

10

- 3. (i) Define the functionalities of an assembler. Discuss the role of symbol table and base table considering all fields.
  - (ii) Show the intermediate steps in a twopass assembler to assemble the following program:

for the	START	8 6 0
	USING	*, 15
	L	1, Five
	A 10.0 1 00	1, Four
	ST	1, TEMP
Four	DC	F'4'
Five	DC	F'5'
TEMP	DS	in 1F
	END	

LIBRARL

STATE OF (ii)

- 4. (i) Discuss various Basic Instruction Formats available in 360 structure with proper examples.
  - (ii) Define Memory, Registers, Data, Instruction and Operational Code. 2×5=10

5. (i) What is a Loader? Discuss the functionalities of Absolute Loader and Relocating Loader with suitable examples.

- (ii) Discuss with suitable example, how arguments in MACRO provides more flexibility in assembly language program than basic MACRO.
- 6. Write short notes on: (any four)

5×4=20

- (i) Linker
- (ii) MACRO
- (iii) Compiler
- (iv) Compile-and-go loader
- (v) Operating System.

