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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S, FE) / S3 (PT) (S) Examination June 2024 (2019 Scheme)

Course Code: CST 305

Course Name: SYSTEM SOFTWARE

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1		List out the addressing modes used in SIC/XE	3
2		What are the functions of Operating System?	3
3		Describe the format of object program generated by the two-pass SIC assembler algorithm	3
4		Write an SIC/XE program to calculate ALPHA=BETA X GAMMA	3
5		Outline the use of assembler directives EXTDEF and EXTREF	3
6		Define expression? Explain different type of expression with example	3
7		Differentiate between Linking loader and linkage editor	3
8		Discuss the advantages and disadvantages of load and go loader	3
9		Differentiate between character and block device drivers	3
10		Illustrate macro expansion with an example.	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

11	a)	Explain the different Addressing Modes and instruction formats used in SIC/XE	9
	b)	Define an assembler directive and list out any 3 assembler directive with its use.	5
12	a)	Explain in detail about any 4 types of system software.	8
	b)	Briefly explain on SIC machine architecture	6

Module -2

13	a)	Explain the use of SYMTAB, OPTAB and LITTAB in pass 1 of assembler wit suitable example	8
	b)	Write SIC/XE program to find Largest among 100 elements in an array	6

14 a) Perform the hand assembly of given SIC/XE program. 8

LABEL	OPCODE	OPERAND
EXAMPLE	START	4000
	LDS	#3
	LDT	#300
	LDX	#0
ADDLP	LDA	ALPHA,X
	ADD	BETA,X
	STA	GAMMA,X
	ADDR	S,X
	COMPR	X,T
	JLT	ADDLP
ALPHA	RESW	100
BETA	RESW	100
GAMMA	RESW	100
	END	EXAMPLE

b) Explain in detail about the pass2 algorithm of two pass assembler 6

Module -3

15 a) What are the problems encountered by single pass assembler? How it is resolved? 7

b) Explain any 2 symbol defining statements. What are its restrictions? 7

16 a) What is the difference between literal and immediate operand? Illustrate with example 6

b) With an example explain the working of multipass assembler 8

Module -4

17 a) Describe about bootstrap loader with the help of an algorithm 8

b) Explain about any one method of program relocation 6

18 a) Outline Pass 1 algorithm and data structure used in linking loader 8

b) What is dynamic linking? Explain with an example 6

Module -5

19 a) Describe one pass macro processor algorithm and the data structures used in it 8

b) Explain any two machine independent macro processor features 6

20 a) Explain the various macroprocessor design options 6

b) Describe about any two commonly used debugging methods 8

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