

(16)

Reg. No. :

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Question Paper Code : P 1202

(16)

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

(16)

Seventh Semester

(8)

Information Technology

(8)

CS 1203 — SYSTEM SOFTWARE

(16)

(Common to Third Semester - Computer Science and Engineering and
Information Technology)

(16)

(Regulation 2004)

(16)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Can an assembler have a single pass? What are the advantages and limitations?
2. List any four addressing modes of SIC/XE.
3. What is the need for a modification record? Give its format for SIC/XE.
4. What are the functions of EXTREF and BASE assembler directives?
5. What is a literal?
6. Distinguish between program blocks and control sections.
7. How does the assembler assist in handling relocation?
8. Distinguish between a subprogram and a macro.
9. Can we use labels while defining macros? Justify.
10. List down the main functions accomplished by a typical editor.

11. (a) Discuss the SIC/XE architecture, explaining in detail the data and instruction formats.

Or

- (b) Generate the object code for the following SIC/XE source program

Label	Operation	Operand	Opcode
TOTAL	START	0	
FIRST	LDX	#0	04
	LDS	#3	6C
	LDT	#300	74
	LDA	#0	00
	+LDB	#TABLE2	68
	BASE	TABLE2	
LOOP	ADD	TABLE, X	18
	ADD	TABLE2, X	18
	ADDR	S, X	90
	COMPR	X, T	A0
	JLT	LOOP	38
	+STA	TOTAL	0C
	RSUB		4C
COUNT	RESW	1	
TABLE	RESW	2000	
TABLE2	RESW	2000	
TOTAL	RESW	1	
	END	FIRST	

- and
12. (a) Discuss the detailed design of pass 1 of a two-pass assembler. Mention clearly the formats of the data structures used. What are the assembler directives that are handled in pass 1?

Or

- (b) What is a single pass assembler? Discuss the detailed design of such an assembler.
13. (a) Discuss the detailed design of a linking and relocating loader. Mention clearly the formats of the data structures used. Indicate the inputs taken and the outputs generated.

Or

- (b) Consider the following SIC/XE :

0000	PROGA START	0
		EXTDEF DATA_1A, DATA_2A
		EXTREF DATA_1B, DATA_2B
0050	REF1	LDA DATA_1A-64
0090	DATA_1A	EQU *
00C2	DATA_2A	EQU *
00D0	REF2	WORD DATA_1B + DATA_2B-20
	END	REF1

0000	PROGB START	0
		EXTDEF DATA_1B, DATA_2B
		EXTREF DATA_1A, DATA_2A
0030	REF1	+LDA DATA_1A-64
0080	DATA_1B	EQU *
00A5	DATA_2B	EQU *
00C2	REF2	WORD DATA_1B + DATA_2B-20
	END	

The opcode for LDA is 00. Show the object programs generated by the assembler for these two programs. Show how these two programs will appear in memory after linking and loading, assuming the program starting address is 5000.

14. (a) Discuss in detail the algorithm for a two-pass macro processor along with the data structures used.

Or

- (b) Write notes on the following :

(i) Macro within macro (8)

(ii) MASM Macro Processor. (8)

15. (a) What is a text editor? Discuss clearly the design of the functional components of a text editor.

Or

- (b) List down the options provided by any debugger that you have used. Discuss briefly the possible design of this debugger.
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Reg. No. :

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Question Paper Code : P 1234

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Seventh Semester

Electronics and Communication Engineering

EC 1009 — DIGITAL IMAGE PROCESSING

(Common to Information Technology)

(Also Common to Eighth Semester Computer Science and Engineering)

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define 4 and 8 Neighbors of a Pixel.
2. What are separable image transforms?
3. Define Histogram.
4. Name the different types of derivative filters.
5. Define averaging filters.
6. Give the difference between Enhancement and Restoration.
7. Define compression ratio.
8. What are the basic steps in JPEG?
9. Show that the average value of the Laplacian operator $\Delta^2 h$ is zero.
10. Define the chain code derivative in 4 and 8 connectivity.

PART B — (5 × 16 = 80 marks)

11. (a) Explain Discrete Cosine Transform and its properties. (16)

Or

- (b) Explain in detail how the continuous image can be converted into digital image using suitable technique. (16)

12. (a) Explain Histogram and give its equalization. (16)

Or

- (b) Discuss in detail the homomorphic and derivative filters. (16)

13. (a) (i) Explain mean filter in detail. (10)

- (ii) Explain the operation of Inverse filtering. (6)

Or

- (b) Explain the Adaptive filter. And also what are the two levels of adaptive median filtering algorithms. (16)

14. (a) Explain with block diagram the lossless predictive coding. (16)

Or

- (b) Explain with block diagram the lossy predictive coding with delta modulation technique. (16)

15. (a) Illustrate with suitable examples how are gradient operators used for detection of edges in medical images. (16)

Or

- (b) Show that how Hough transforms can be used to link edges. (16)