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13MCA24

**Second Semester MCA Degree Examination, Dec.2017/Jan.2018**  
**System Software**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 1 a. Describe the following with respect to SIC/XE:
 

(i) Register	(ii) Data format	(iii) Instruction format	
(iv) Addressing modes	(v) Instruction set	(vi) Memory	(12 Marks)

 b. Write a SIC/XE program to add 5 consecutive words and store it in memory location SUM. (04 Marks)  
 c. Generate Target Address for the following OP-codes: (04 Marks)
 

(i) 010030 h	(B) = 006000
(ii) 03C300 h	(PC) = 003000
	(X) = 000090
  
- 2 a. Explain the following with an example for each:
 

(i) BYTE	(ii) JSUB	(iii) EXTDEF	(iv) ORG	(08 Marks)
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 b. Write the algorithm for pass-1 and pass-2 of a two-pass assembler. (12 Marks)
  
- 3 a. Explain the following records with their format with respect to SIC/XE:
 

(i) Header record	(ii) Define record	(iii) Refer record	(iv) Text record	(08 Marks)
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 b. Write notes on:
 

(i) Program relocation.	(12 Marks)
(ii) Multi-pass assembler handling forward references.	(12 Marks)
  
- 4 a. Write the algorithm for Bootstrap loader. (07 Marks)  
 b. List the functions of Pass 1 and Pass 2 of a linking loader. (05 Marks)  
 c. Explain the concept of dynamic linking with a neat figure. (08 Marks)
  
- 5 a. Discuss the debugging functions and capabilities of an interactive debugging system. (10 Marks)  
 b. Explain the structure of a text editor with a neat figure. (10 Marks)
  
- 6 a. Write the algorithm for one-pass macro processor. (12 Marks)  
 b. Write short notes on:
 

(i) Generation of unique label.	(08 Marks)
(ii) Keyword macro parameter.	(08 Marks)
  
- 7 a. Explain recursive descent passing. (10 Marks)  
 b. Explain machine independent code optimization techniques with examples. (10 Marks)
  
- 8 Write short notes on:
 

a. MASM assembler.	
b. Linkage editor.	
c. Automatic library search.	
d. P-code compiler.	(20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.