

# CBCS SCHEME

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18MCA34

## Third Semester MCA Degree Examination, Aug./Sept. 2020 System Software

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Explain the architecture of SIC/XE machine. (12 Marks)  
b. Write the algorithm of Pass – 1 of two – pass Assembler. (08 Marks)

OR

- 2 a. Explain the VAX Architecture. (08 Marks)  
b. Generate the object code for the following program using the following OPCODES.  
CLEAR = B4, LDS = 6C, ADD = 18, J = 3C.

```
START      0
FIRST CLEAR X
          +LDS #4096
          ADD  @TAB1
ALPHA RESB  1
TAB1 WORD  256
END
```

- c. Explain the various data structure used in the assemblers. (04 Marks)

### Module-2

- 3 a. What is program Relocation? Explain how to resolve the relocation problem with an block diagram and example. (08 Marks)  
b. Explain MASM assembler in detail. (08 Marks)  
c. Explain following Assembler Directives with example :  
i) LTORG  
ii) BASE. (04 Marks)

OR

- 4 a. Explain Control Section. How are these handled by the assembler? (06 Marks)  
b. Write an algorithm for one pass assembler. (10 Marks)  
c. What do you mean by delayed branches in SPARC assembler? Explain with example. (04 Marks)

### Module-3

- 5 a. Explain a simple bootstrap loader with a source program. (10 Marks)  
b. Explain how the program linking is performed by the loader with a block diagram. (10 Marks)

OR

- 6 a. Explain dynamic linking with neat diagrams. (08 Marks)  
b. Explain linking loader and linkage editor with neat diagrams. (06 Marks)  
c. Write a note on MSDOS Linker. (06 Marks)

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.

**Module-4**

- 7 a. Write an algorithm for one – pass macro processor. (10 Marks)  
 b. Explain how the ARG TAB is affected in recursive macro expansion with proper example. (10 Marks)

**OR**

- 8 a. Explain the different data structures used by macro processor with block diagram. (08 Marks)  
 b. Explain the following with examples. (12 Marks)  
 i) Concatenation of Macro Parameters  
 ii) Generation of Unique Labels.

**Module-5**

- 9 a. Explain Recursive Descent Paring. Write recursive descent parse for READ statement. (08 Marks)  
 b. Write note on : (06 Marks)  
 i) P – Code Compiler  
 ii) Compiler – Compilers  
 c. Using the given finite automation, check if the following strings are recognized or not. (06 Marks)  
 i) abca  
 ii) abccccabc  
 iii) abaab  
 iv) ababcab  
 v) abababab  
 vi) abba.

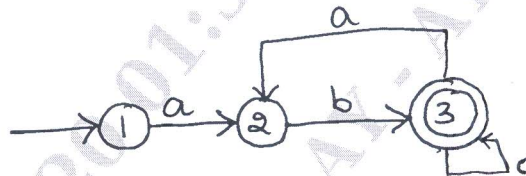


Fig Q9(c)

**OR**

- 10 a. Briefly discuss different machine independent code optimization technique. (10 Marks)  
 b. Discuss the following Basic compiler functions: (10 Marks)  
 i) Lexical Analysis  
 ii) Syntactic Analysis.

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