

## B.Tech 4th Semester Exam., 2019

## SYSTEM PROGRAMMING

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Answer/Fill in the blanks/Choose the correct option (any seven) : 2×7=14

- (a) List out any four registers found in SIC/XE.
- (b) In a two-pass Assembler pseudo code EQU is to be evaluated during
  - (i) pass 1
  - (ii) pass 2
  - (iii) not evaluated by the assembler
  - (iv) None of the above

(c) Which of the following features of assembler are machine-dependent?

- (i) Instruction formats
- (ii) Addressing modes
- (iii) Program relocation
- (iv) All of the above

(d) What is Bootstrap loader?

(e) \_\_\_\_\_ are used for reduce the main memory requirements of program.

(f) Interpreter and compilers are \_\_\_\_\_ software.

(g) What is Macro and Macro processor?

(h) A compiler bridges the semantic gap between \_\_\_\_\_.

(i) The translator which perform macro expansion is called a/an

- (i) macro processor
- (ii) macro pre-processor
- (iii) micro pre-processor
- (iv) assembler

- (j) A software environment consists of
- (i) a syntax directed editor
  - (ii) a language processor
  - (iii) dialog monitor
  - (iv) All of the above
2. (a) Differentiate between system software and application software. 4
- (b) Explain in detail about SIC/XE machine architecture. <http://www.akubihar.com> 10
3. (a) What is a multi-pass assembler? Explain with an example about functioning of a multi-pass assembler. 9
- (b) Given below is a simple SIC/XE machine language program containing only four instructions which are executed in sequence :
- 010005  
690006  
9030  
0F1ABCDE
- (i) Translate it into assembler for the SIC/XE.
- (ii) Explain what the whole program does. 5

4. (a) What are the basic functions of assembler and two-pass assembler? 4
- (b) Briefly discuss various data structures required for a design of one-pass macro processor. Write and explain the algorithm for one-pass macro processor. 10
5. (a) Explain with a neat diagram of Dynamic Linking with an example. 7
- (b) Distinguish between linking loader and linkage editors with diagram. 7
6. (a) Brief out the features of Machine Independent Loader. 9
- (b) Write a short note on MSDOS-Linker. 5
7. (a) Write notes on p-code compiler and compiler-compilers. 5
- (b) Draw a block diagram of the phases of a compiler and explain its purpose. 9
8. (a) Explain the different Debugging Functions and Capabilities. 9
- (b) Define User-Interface of an editor. 5
9. (a) Explain the structure of an editor with a neat diagram and their relationship between editing and viewing buffers. 7
- (b) What is a software tool? Explain fundamental steps involved for program development in software tools. 7