

B.Tech 4th Semester Exam., 2016**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. Choose and write the correct option
(any seven) : 2×7=14

(a) Load address for the first word of the program is called

(i) linker address origin

(ii) load address origin

(iii) phase library

(iv) absolute library

- (b) Symbolic names can be associated with
- (i) information
 - (ii) data or instruction
 - (iii) operand
 - (iv) mnemonic operation
- (c) An assembler is
- (i) programming language dependent
 - (ii) syntax dependant
 - (iii) machine dependant
 - (iv) data dependant
- (d) Nested macro calls are expanded using the
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- (i) FIFO (first in, first out) rule
 - (ii) LIFO (last in, first out) rule
 - (iii) FILO (first in, last out) rule
 - (iv) None of the above

- (e) A linker program
- (i) places the program in the memory for the purpose of execution
 - (ii) relocates the program to execute from the specific memory area
 - (iii) links the program with other programs needed for its execution
 - (iv) interfaces the program with the entities generating its input data
- (f) Which of the following is language processors?
- (i) Assembler
 - (ii) Compiler
 - (iii) Interpreter
 - (iv) All of the above
- (g) Assembler is a machine dependent, because of
- (i) macro definition table (MDT)
 - (ii) pseudo-operation table (POT)
 - (iii) argument list array (ALA)
 - (iv) mnemonics operation table (MOT)

(Turn Over)

- (h) Macro processor is an inbuilt function of
- (i) loader
 - (ii) editor
 - (iii) linker
 - (iv) assembler
- (i) Forward reference table (FRT) is arranged like
- (i) stack
 - (ii) queue
 - (iii) linked list
 - (iv) doubly linked list
- (j) An interpreter is
- (i) a program that places programs into memory and prepares them for execution
 - (ii) a program that automate the translation of assembly language into machine language
 - (iii) a program that accepts a program written in high-level language and produces an object program
 - (iv) a program that appears to execute a source program as if it were machine language

2. (a) What are the data structures required for a two-pass assembler? Explain the format of the data structures used by two-pass assembler.
- (b) What are assembler directives? Explain the purpose of the following pseudos : ^{operations}
- 8+6=14
- (i) USE
 - (ii) BASE
 - (iii) EXTRER
 - (iv) ORG
 - (v) LTORG
3. (a) Explain the concept of program relocation.
- (b) With syntax, explain the usage of different symbol-defining statements in an assembler. 6+8=14
4. (a) Discuss in brief about different data structures used by a macro processor.
- (b) What is the need for concatenation of macro parameters? Explain how it is done. 6+8=14

5. (a) Justify with reasons whether the following statements are True or False :
- (i) Relocation is performed by linker.
 - (ii) Transfer vectors are used by direct linking loader.
 - (iii) In absolute loader, linking is done by programmer.
 - (iv) In compile and go loader, linking is performed by loader.
- (b) List the four important tasks to be accomplished by a text editor for an interactive user computer dialog. 8+6=14
6. (a) What is dynamic loading? What are its advantages and disadvantages? Explain with a neat diagram, loading and calling of subroutine using dynamic linking.
- (b) Differentiate between literal and immediate operand with example. 10+4=14
7. (a) What is an overlay structure? What is its use?
- (b) Give the comparison between absolute loader and compile-and-go loader.
- (c) Explain the design of relocating loader. 3+3+8=14

8. (a) Explain different phases of a compiler, showing the output of each phase, using the example of the following statement :
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- i. position:=initial + rate * 60**
- (b) Compare between compiler and interpreter. 10+4=14
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9. Write short notes on any two of the following : 7×2=14
- (a) Interpreter
 - (b) Self-relocating program
 - (c) Recursive macro expression
