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229 (SP)

[18–I [RGPKAC–D6S]

BCA 6th Semester Exam., 2018

SYSTEM PROGRAMMING

[3CA (S6) 19]

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer the following as directed : 1×8=8

(a) Name the two language processing activities.

(b) What are the main components of a grammar?

(c) Define formal language.

(d) Write the difference between compiler and interpreter.

(e) Write the general format of a machine instruction.

(f) Write an assembly language statement to reserve a block of 100-memory word.

(g) ADD, MOVE, READ are the examples of _____ statements.
(Fill in the blank)

(h) The output of the linker is stored in a file with the extension name _____.
(Fill in the blank)

2. Answer the following questions : 2×8=16

(a) What is the purpose of symbol table?

(b) Write two advantages of assembly language programming.

(c) Differentiate between dynamic linking and dynamic loading.

(d) What are pure and impure interpreters?

(e) Give the definition of relocatable and executable object file.

(f) Mention the main function of bootstrap loader.

(g) Define regular expression using suitable example.

(h) Mention the functions of location counter in case of an assembler.

3. Answer any *five* from the following questi ns : 4×5=20

(a) Briefly discuss the working principle of an absolute loader.

(b) Define loading, relocating and linkin .

(c) Using an example, explain the code ptimization phase of compiler.

(d) Define parse tree, leftmost derivation and ambiguous grammar.

(e) Write the working principle of a dire t linking loader.

(f) What are the basic features of assen bly language programming?

4. Answer any *two* from the following questi ns : 8×2=16

(a) List out the functions performed by lo der and linker. Briefly discuss the two-pass linking mechanism. 4+4=8

(b) What are imperative, declarative and assembler directives? Give examples of each of these categories of statements. 8

(c) Write short notes on any *two* of the following : 4×2=8

(i) Overlay

(ii) Compile and go loader

(iii) LR parsing

5. Answer any *two* from the following questi ns : 10×2=20

(a) What is a deterministic finite aut mata (DFA)? Mention the main components of a DFA. Write the mai characteristics of DFA and NFA. Draw a DFA that accepts all strings w th at least one *a* from the alphabet {*a*, *b*}. 2+2+3+3=10

(b) Explain static and dynamic memory llocations during compilation of a program. Give examples of langu ges where static and dynamic allocations are used. 10

(c) Mention the two main phases of a cc mpiler. Briefly describe the lexical, syntax and semantic analyses of a c mpiler. 1+3+3+3=10

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