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90 (SS)

[19HKMDCAO–M4S(O)19A]

MCA/MScIT 4th Semester (Old) Exam., 2019 (S)

SYSTEM SOFTWARE

[MCA/MScIT (S4) 16]

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer any *five* from the following questions : 2×5=10

(a) Write the uses of system utilities.

(b) Name the basic unit of an assembly language program.

(c) Define assemblers.

(d) What is the purpose of DLL?

(e) Write the functions of pre-processors.

(f) Differentiate between single- and multi-user operating system.

2. Answer any *three* from the following : 4×3=12

(a) Explain the main components of an operating system.

(b) Distinguish between one-pass and two-pass assemblers. Name the two macro-processor pseudo-ops.

(c) What are the different types of grammar in Chomsky hierarchy?

(d) Consider the grammar

$$S \rightarrow aSbS|bSaS|\varepsilon$$

Construct the parse tree for *aabb*.

3. Answer any *three* from the following questions : 6×3=18

(a) Define regular expression. Write a regular expression to denote a language L over Σ^*, where $\Sigma = \{a, b\}$ such that each of the strings does not have two consecutive *a*'s.

(b) Distinguish between a linker and a loader. Explain the functions of a linker.

(c) Illustrate about the key factors of Windows XP.

(d) Construct a grammar G to represent a language L which is a set of all palindromes over $\{a, b\}$.

4. Answer any *four* from the following questions : 10×4=40

(a) What is context-free grammar? Given a CFG, $G = (V, T, P, S)$ where $T = \{a, b\}$, $V = \{s\}$, $P: S \rightarrow aSa|bSb|\varepsilon$. Generate the parse tree for any word of the grammar.

(b) What is an assignment statement? What are the issues in code generation?

(c) Give the steps to convert a DFA to a regular expression. Also describe how a top down parser works. 5+5=10

(d) Discuss any five directives used in assembly language.

(e) Explain the different phases of a compiler.

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