

20U341

(Pages: 2)

Name:

Reg.No:

THIRD SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U BCA3 C03 - THEORY OF COMPUTATION

(Computer Application - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer *all* question. Each question carries 2 marks.

1. What is Subset?
2. Write ordered directed tree.
3. Define tenninal symbol.
4. Make a definition of grammar.
5. Define Type-0 grammar.
6. Design a DFA all strings not ending in 00.
7. State trap state.
8. Define regular set.
9. State Arden's theorem.
10. Define leftmost derivation.
11. Give a definition CNF.
12. Write a definition of Bottom up parsing.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer *all* question. Each question carries 5 marks.

13. Explain transition systems with example.
14. Explain NFA with example.
15. Explain Moore Machine with example.
16. Explain construction of a regular grammar for a given dfa with example.
17. Show that the grammar $S \rightarrow aAa, A \rightarrow bBB, B \rightarrow ab, C \rightarrow Ab$ is ambiguous/not ambiguous.
18. Design PDA for $\{0^m 1^n 0^n \mid m, n \geq 1\}$
19. Explain Acceptance by PDA with example.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any *one* question. The question carries 10 marks.

20. Prove $1^3 + 2^3 + 3^3 + \dots + n^3 = ((n(n+1))/2)^2$ using proof by induction.
21. Construct a nondeterministic finite automaton accepting the set of all strings over $\{a, b\}$ ending in abba. Use it to construct a DFA accepting the same set of strings.

(1 × 10 = 10 Marks)
