THIRD SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2022

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U BCA3 C06 - 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* questions. Each question carries 2 marks.

1. Define Transitive relation.

2. Prove that $\sqrt{3}$ is irrational using proof by contradiction.

3. List types of langauages.

4. Define automaton.

5. Define transition systems.

6. Design a NFA all strings has substring 10.

7. Define Mealy Machine.

8. Define unreachable state.

9. Define regular set.

10. Write an unambigous grammar.

11. Define Non Deterministic Pushdown automata.

12. Define Turing machine.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

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

13. Explain concepts of Strings with example.

14. Explain grammar with example.

15. Explain two closure properties of regular set.

16. Explain construction of a dfa for a given regular grammar with example.

17. Prove (a + b)* =a*(ba*)*

18. Explain derivation tree with example.

19. Design a turing machine accepting wwR w∈ (a+b)*

(Ceiling: 30 Marks)

Part C (Essay questions)

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

20. Explain in detail concepts of trees with example.

21. State and prove equivalence of DFA and NDFA.

(1 × 10 = 10 Marks)

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