17U333   (Pages: 2)   Name: ....………………..

Reg. No.……………………

THIRD SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2018
(CUCBCSS-UG)
CC17U BCA3 C06 - THEORY OF COMPUTATION
(Complementary - Course)
(2017 Admission Regular)

Time: Three Hours   Maximum: 80 Marks

PART A
Answer *all* questions. Each question carries 1 mark.

1. Define grammar.

2. Construct DFA a*b*

3. Name five operations on strings.

4. What is the main difference between Mealy and Moore Models?

5. Define Terminal and Non terminal strings.

6. Draw Chomsky hierarchy.

7. Give two application of Turing machine.

8. Define Regular Expression.

9. Let $R = \{(1, 2), (2, 3), (2, 4)\}$ be a relation in $\{1, 2, 3, 4\}$. Find R^+

10. What is context free grammar?

(10 x 1 = 10 Marks)

PART B
Answer *all* questions. Each question carries 2 marks.

11. What is an automaton?

12. Give the classification of languages.

13. Explain regular expression.

14. Explain any one closure property of regular expression.

15. How to eliminate left recursion?

16. Explain derivation tree.

17. Define PDA

18. Explain recursive enumerable sets.   **(8 x 2 = 16 Marks)**

PART C
Answer any *six* questions. Each question carries 4 marks.

19. Explain Mealy to Moore conversion with example.

20. Explain regular expression to NFA.

21. Explain ambiguity with example.

22. Prove by mathematical induction a tree with n vertices has n-1 edges.

23. Construct NFA for the regular expression (a+bb)

24. Show that $L = \{a^n b^n c^n\}$ is not context free.

25. Explain closure properties of regular languages.

26. Explain simplification of context free language.

27. Discuss the Turing machine model.

(6 x 4 = 24 Marks)

PART D
Answer any *three* questions. Each question carries 10 marks

28. Explain minimization of automata with example.

29. Explain ring with its postulates.

30. Prove the equivalence of PDA and CFG

31. Explain normal form of CFL

32. (a) Construct a DFA accept all string of {a,b} where every string end with aa or bb

(b) Distinguish between DFA and NDFA

(3 x 10 = 30 Marks)

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