SECOND INTERNAL EXAMINATION OCTOBER 2018

THIRD SEMESTER BCA

BCA3C06: THEORY OF COMPUTATION

Time: 3 hours   **Max. Marks: 80**

Part -A
Answer all questions
Each carries 1 mark

1. What is deductive proof?

2. Give the examples/applications designed as finite state system.

3. Define: (i) Finite Automaton(FA) (ii)Transition diagram.

4. What are the applications of automata theory?

5. Define proof by contrapositive.

6. What are the components of Finite automaton model?

7. Differentiate NFA and DFA

8. What is Є-closure of a state q0?

9. What is a regular expression?

10. What is Arden's Theorem?

(10*1 =10 marks)

Part - B
Answer all questions
Each carries 2 marks

11. What are the applications of Regular expressions and Finite automata

12. Reg exp for the language that accepts all strings in which 'a' appears tripled over the set Σ ={a}

13. What are the applications of pumping lemma?.

14. What is the closure property of regular sets?

15. Write the exp for the language starting with and has no consecutive b's

16. What is the relationship between FA and regular expression.

17. What are the applications of Context free languages?

18. What are the uses of Context free grammars?

(8*2 =16 marks)

Part – C

Write short essay on any six

Each carries 4 marks

19. What is :(a) derivation (b)derivation/parse tree (c) subtree:

20. If S->aSb | aAb , A->bAa , A->ba .Find out the CFL.

21. Consider the grammarP={S->aS | aSbS | Є } is ambiguous by constructing: (a) two parse trees (b) two leftmost derivation (c) rightmost derivation.

22. Find CFG with no useless symbols equivalent to : S→AB | CA , B→BC | AB, A→a , C→aB | b..

23. Construct CFG without Є production from : S →a | Ab | aBa , A →b | Є , B →b | A.

24. What are the three ways to simplify a context free grammar?.

25. What are the properties of the CFL generated by a CFG?.

26. Find the grammar for the language L={a2n bc ,where n>1 }.

27. Find the language generated by :S->0S1 | 0A | 0 |1B | 1.

(6 *4=24 marks)

Part — D
Write essays on any three
Each carries 10 marks

28. Let G= ({S,C} ,{a,b},P,S) where P consists of S->aCa , C->aCa |b. Find L(G)..

29. Find L(G) where G= ({S} ,{0,1}, {S->0S1 ,S->Є },S).

30. What is a parser?

31. Define Pushdown Automata Explain with example.

32. Compare NFA and PDA. Explain with example

(3*l0 =30 marks)