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Total No. of Questions : 8] [Total No. of Printed Pages : 2

EGS-218

B.E. 4th Semester (CGPA) CSE (Zero Sem.) Examination - 2018

THEORY OF COMPUTATION

Paper–CS–405

Time : 3 Hours] [Maximum Marks : 60

Note : Attempt any five questions out of eight questions.

1. (a) Discuss NDFA with example. 6
   (b) Design a FA that accepts set of strings such that every string ends in 00. 6
2. (a) Explain context free grammer with example.6
   (b) Design a DFA for the Language $L = \{ w : n_a = 1, w \in (a, b)^* \}$
3. (a) Discuss the closure properties of Regular languages. 6
   (b) Discuss the Myhill-Nerode Theorem with the help of suitable example. 6
4. (a) Differentiate between Moore Machine and Melay Machine. 6

(b) Prove the following identity: 6

$(a^*ab + ba)^* a^* = (a + ab + ba)^*$.

5. (a) Consider the grammer G, with production.

$S \rightarrow aXY$

$X \rightarrow bYb$

$Y \rightarrow X/E$

Construct a parse tree for w = abbbb. 6

(b) What do you understand by ambiguity in grammers? Explain with the help of suitable example. 6

6. (a) What is PDA². What type of Languages are accepted by PDA? 6

(b) Construct the equivalent PDA for the following CFG's. 6

$S \rightarrow Saa \mid aSa \mid aaS$

7. (a) Explain the Turing machine halting problem. 6

(b) Explain Markov Algorithms. 6

8. Write short notes on any three: 4×3=12

(i) CNF and GNF

(ii) Turing thesis

(iii) Post Correspondence problem

(iv) Recursive functions