

AQ - 1042

Third Semester M. Sc. (Part - II) Examination

(CBCS Pattern)

COMPUTER SCIENCE

3 MCS 4 (2)

(Theory of Computation)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) All questions are compulsory.
(2) Use suitable data wherever necessary.

1. (A) What is DFA ? Explain with example. 6
(B) Describe the sets denoted by following
Regular Expressions :—
(i) $(11 + 0)^* 00$
(ii) $(1 + 0)^* 10$ 8

OR

2. (A) State and Explain the applications of finite
automata. 6
(B) Describe sets denoted by following Regular
expressions :—
(i) $(11 + 0)^* (00 + 1)^*$
(ii) $(1 + 01 + 001)^*$ 8

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P.T.O.

3. (A) What is two way Finite Automata ? Explain. 7

(B) $L = \{0^n | n \text{ is an integer } n \geq 1\}$ state whether L is Regular or Not. Justify your answer. 7

OR

4. (A) Explain :

(i) Left Linear grammar.

(ii) Right Linear grammar. 8

(B) What is Pumping Lemma ? Explain. 6

5. (A) What is PDA ? Explain. 7

(B) What is GNF ? Explain. 6

OR

6. (A) What is derivation tree ? Explain. 7

(B) What is CFL ? Explain. 6

7. (A) What is Turing machine ? Explain. 7

(B) State and explain the modifications of Turing machine. 6

OR

8. (A) State and explain the applications of Turing Machine. 7

(B) Construct Turing Machine for $\{WW^R | w \text{ in } (0+1)^*\}$ 6

9. (A) What is Linear bounded Automata ? Explain. 7

(B) What is DCFL ? Explain. 6

OR

10. (A) What is DPDA ? Explain. 7

(B) What are context sensitive Languages ? Explain. 6

11. (A) What is Universal Turing Machine ? Explain. 7

(B) State and explain applications of Post Correspondence Problem. 6

OR

12. (A) What is PCP ? Explain. 7

(B) What are the properties of recursive enumerable Languages ? Explain. 6

