

# MCA-18

December – Examination 2020

## Master of Computer Application (IIIrd Year) Examination

Formal Languages and Automata

Paper : MCA-18

*Time : 2 Hours ]*

*[ Maximum Marks : 80*

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**Note** :- The question paper is divided into two Sections A and B. Write answers as per the given instructions.

**Section-A**

**8×2=16**

**(Very Short Answer Type Questions)**

**Note** :- Answer all questions. As per the nature of the question delimit your answer in one word, one sentence or maximum upto **30** words. Each question carries 2 marks.

1. (i) Give an example of ambiguous context free grammar.

- (ii) What is Finite Automata ?
- (iii) What is Epsilon-transition ?
- (iv) Give a formal definition of Grammar.
- (v) What are the power sets ?
- (vi) State decidable problem.
- (vii) What do you mean by Universal TM ?
- (viii) What is Regular Language ?

**Section-B**                      **4×16=64**

**(Short Answer Type Questions)**

**Note** :- Answer any *four* questions. Answer should not exceed **200** words. Each question carries 16 marks.

- 2. Define DFA. Obtain DFA for the regular expression  $aa^*/bb^*$ .
- 3. Define the basic model of a Turing Machine.
- 4. Explain the closure property of CFL.
- 5. Explain the PDA in brief.

- 6. Give a brief overview of the Turing Machine.
- 7. Explain the problems that computers can't solve.
- 8. Explain the Parsing and Parse Tree with a suitable example.
- 9. Write a short note on the lexical analyzer.