

JR-3532

**M. A./M. Sc. (Second Semester) Examination,
June 2022**

MATHEMATICS

Paper : Fifth (ii) (Optional)

(Advanced Discrete Mathematics-II)

Time Allowed : Three hours

Maximum Marks : 40

***Note : Attempt questions of all two sections as directed.
Distribution of marks is given with sections.***

Section-‘A’

(Short Answer Type Questions) $5 \times 3 = 15$

***Note : Attempt all five questions. Each question
carries 3 marks.***

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PTO

1. Explain directed graph with example.
Or

Define search trees with example.

2. Define finite state machine with example.
Or

Define finite automata.

3. Explain non-deterministic finite automata.
Or

Describe Melay machine.

4. Define turing machine. Give two example of it.
Or

Explain phrase-structure grammar.

5. Define context-free grammar.
Or

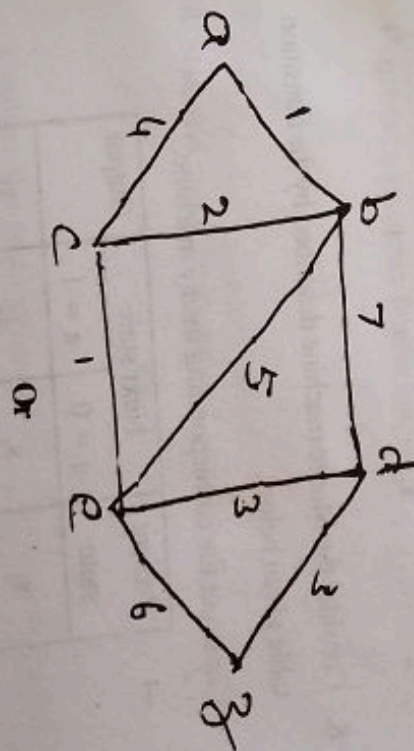
Explain regular expressions.

Section-'B'

(Long Answer Type Questions) 5×5=25

Note : Attempt all five questions. Each question carries 5 marks.

6. Write an algorithm for shortest path in weighted graph and use it to find shortest path from a to z in the graph shown in figure, where the number associated with the edges are in weights.



Or
State and prove the Marshall's Algorithm.

7. Design a finites state machine M which can add two binary numbers.

