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K-1048

M.A./M.Sc. (Previous)

Examination, 2022

MATHEMATICS

(Differential Equation)

Time Allowed : Three Hours

Maximum Marks : 100

Minimum Passing Marks : 36

Note : Attempt **any five** questions. All questions carry **equal** marks.

1. Sate and prove that Picard Lindeloff theorem.

2. State and prove that Peano's existence theorem.

3. Prove that the set of all solution of linear homogenous on I from an n- dimensional vector space over the C.

4. Write down the properties of continuous dependence and stability of linear system.

5. Explain the following :

   (a) Lyapunov function

   (b) Number of Zeros

6. Explain Krasovskii's method.

7. Explain the properties of stability of linear system.

8. State and prove that Ziehur's theorem.

9. Find the eigen values and eigen functions of the sturm Liouville problem.

10. State and prove that Floquet's theorem.

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