

Roll No.

Total No. of Pages : 02

Total No. of Questions : 07

M.Sc. (Mathematics) (Sem.-2)

MECHANICS-I

Subject Code : MSM-203-18

M.Code : 75964

Date of Examination : 08-07-22

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIVE questions carrying TWO marks each.
2. SECTION-B & C have THREE questions each.
3. Attempt any FOUR questions from SECTION-B & C carrying FIFTEEN marks each.
4. Select atleast TWO questions from SECTION - B & C each.

SECTION-A

1. Write short notes on :

- a. State the Hamilton's principle
- b. Define Geodesies.
- c. State D'Alembert's principle.
- d. State the energy equation for conservative fields.
- e. What is principle of Least action?

SECTION-B

2. Establish Euler's equation for one dependent function of one and several variables.
3. Establish Lagrange's equation of motion of the first kind for an unconnected holonomic system.

4. Illustrate the following :
 - a) Discuss Energy equation for conservative fields.
 - b) Explain Fundamental Lemma of Calculus of Variation.

SECTION-C

5. State and prove Jacobi-Poisson theorem.
6.
 - a) Solve the harmonic oscillation problem by Hamilton Jacobi method.
 - b) State the necessary and sufficient condition for a transformation to be canonical.
7. Explain in detail invariance of Lagrange's bracket and Poisson's bracket.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.