

D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1
SEMESTER EXAMINATIONS
NOVEMBER – 2018
MECHANICS

15CPMA1D

Time : 3 Hours

Max. Marks: 75

SECTION – A (5 x 6 = 30)

Answer ALL the questions.

1. (a) *State and prove D'Alembert's principle.*

(Or)

(b) *Discuss principle of work and kinetic energy.*

2. (a) *Derive the standard form of Lagrange's equation for a holonomic system.*

(Or)

(b) *State and prove the Kepler problem.*

3. (a) *Derive Hamilton equation of motion.*

(Or)

(b) *Derive the Jacobi's form of principle of least action.*

4. (a) *For a conservative holonomic system obtain the modified Hamilton Jacobi equation.*

(Or)

(b) *State and prove the Jacobi's Theorem.*

5. (a) *State and prove the Poisson's Theorem.*

(Or)

(b) *State and prove Jacobi's Identity.*

SECTION – B (3 x 15 = 45)

Answer any THREE of the following questions.

6. *State and prove the Konig's Theorem.*

7. *Derive Lagrangian equation in terms of Routhian function.*

8. *State and prove the Brachistochrone problem.*

9. *State and prove the Hamilton Principle theorem.*

10. *Explain Lagrangian brackets.*
