

Q1. Both statements, 1 and 2 are correct

Q2. In finite variable optimization, variables are finite in number whereas in calculus of variations unknown is a function

Q3. Cycloid

Q4. Statement 1 is correct but not statement 2

Q5. $f(x) = 0$

Q6. Calculus of variations problem with constant perimeter constraint

$$\text{Q7. } \frac{\partial F}{\partial y} - \frac{d}{dx} \left(\frac{\partial F}{\partial y'} \right) = 0$$

$$\text{Q8. } \int \sqrt{1 + \left(\frac{dy}{dx} \right)^2} dx$$

Q9. Hamilton's principle

Q10. 1