

# Lagrange Multipliers MCQ Questions

Q1. “The method of Lagrange multipliers is useful in dealing with non-linear, equality, and inequality constraints in optimization problems.”

- TRUE
- FALSE

Q2. For Lagrange multipliers,  $\nabla f$  is not parallel to  $\nabla g$

- TRUE
- FALSE

Q3. The Lagrangian function to optimize  $f(x, y)$  subject to constraint  $g(x, y)$  would be:

- $\mathcal{L}(x, y, \lambda) = f(x, y) - \lambda(g(x, y) - c)$
- $\mathcal{L}(x, y, \lambda) = f(x, y) - \lambda g(x, y)$
- $\mathcal{L}(x, y, \lambda) = g(x, y) - \lambda(f(x, y) - c)$

Q4. Find the maximum and minimum values of  $f(x, y, z) = y^2 - 10z$

subject to the constraint  $x^2 + y^2 + z^2 = 36$

- Maxima is 60 and minima is -60
- Maxima is 51 and minima is -30
- Maxima is 29 and minima is 10
- Maxima is 61 and minima is -60

Q5. “In constrained optimization, there are some restrictions like which points within the domain of  $f$  are to be analyzed for extrema.

- TRUE
- FALSE

# ANSWER KEY

Q1. TRUE

Q2. FALSE

Q3.  $\mathcal{L}(x, y, \lambda) = f(x, y) - \lambda(g(x, y) - c)$

Q4. Maxima is 61 and minima is -60

Q5. TRUE