

Q1. Zero

Q2. Same necessary condition will also satisfy a maximum.

Q3. All of the above

Q4. $x=0, y=0, z=0$

Q5. 2, 8, 24

Q6. Minimum

Q7. If Hessian is not positive-definite, it can be concluded that a point is not a local minimum.

Q8. 3

Q9. 2

Q10. g_1

Q11. All of the above

Q12. Both (a) and (b)

Q13. The gradient vectors of the objective function and all equality and active inequality constraints are linearly independent.

Q14. $x_1 = 1, x_2 = 0$

Q15. KKT conditions are not applicable as constraint qualification is not satisfied for the problem.