**Linear Algebra Questions – Summary of Answers**

Q1. Dimension of row space and column space → Same always (C)
Q2. Gram–Schmidt result → Orthogonal vectors spanning same space (a)
Q3. Trace and determinant → 6 and 6 (c)
Q4. Max linearly independent vectors → 5 (a)
Q5. Eigenvector for eigenvalue −1 → Option (b)
Q6. Matrix defining inner product → Symmetric positive definite (d)
Q7. Matrix in RREF → Option (b)
Q8. Frobenius norm squared → 30 (a)
Q9. Given vectors → Linearly dependent (d)
Q10. Given vectors → Orthonormal set (b)
Q11. Positive definite matrix eigenvalues → All positive (a)
Q12. Characteristic equation → $\lambda^3 - 27\lambda^2 + 167\lambda - 285 = 0$ (c)
Q13. Values of a, b, c → −6, −4, −9 (b)
Q14. Value of p + q + pq → −5 (c)
Q15. Not an orthogonal matrix → Option (b)
Q16. Order of (10A – 5B)■ → m × 4 (a)
Q17. Value of m → 5 (c)
Q18. Not a subspace → {(x,y): x ≥ 0, y ≥ 0} (d)
Q19. Distance between $x^2$ and x → $4\sqrt{15} / 15$ (d)
Q20. Vector in span → (3,7,11) (c)