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| a) increases induced drag | b) decreases induced drag |
| c) is structurally stiffer than a low aspect ratio | d) has a higher stall angle than a low aspect ratio |

PART B (10 x 2 = 20 Marks)

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| 11. List the types of platforms | CO1 | [K ₂] |
| 12. What is meant by ship resistance? | CO1 | [K ₂] |
| 13. List out the characteristics of Kolkata class stealth guided-missile destroyer | CO1 | [K ₂] |
| 14. Name the main battle tank (MBT) developed by DRDO. | CO1 | [K ₂] |
| 15. Define the term Fuse of a Bomb | CO1 | [K ₂] |
| 16. Name three traditional factor which determines the effectiveness of a tank | CO2 | [K ₂] |
| 17. Define buoyancy | CO2 | [K ₂] |
| 18. Differentiate between fixed wing and rotary wing aircraft | CO2 | [K ₂] |
| 19. What are aircraft control surfaces? | CO2 | [K ₂] |
| 20. Name the self-defence and protection systems | CO2 | [K ₂] |

PART C (6 x 5 = 30 Marks)

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| 21. Draw the cross section of a combat and exercise Sea Mine showing various sections and subsystems. Explain them. | 5 | CO1 | [K ₃] |
| 22. The weights of a wheeled vehicle and a tracked vehicle are same. Which one will exert less nominal ground pressure and why? | 5 | CO1 | [K ₃] |
| 23. The expected value of the voltage across a resistor is 89V. However, the measurement gives a value of 90 V. Calculate absolute error and percentage error | 5 | CO1 | [K ₃] |
| 24. Explain the functions of the warship- Destroyer | 5 | CO2 | [K ₃] |
| 25. The drag polar of an airplane is of the form $C_D = C_{D_0} + KC_L^2$. Show that the lift/drag ratio at minimum power is given by $\sqrt{\frac{3}{16KC_{D_0}}}$ for steady level flight | 5 | CO2 | [K ₄] |
| 26. Describe the drag polar of an aircraft with a neat sketch. | 5 | CO2 | [K ₄] |

Answer any FOUR Questions

PART D (4 x 10 = 40 Marks)

27. Explain the general design feature of the submarine Hull-single and double hull. **10** CO1 [K₃]
Discuss the materials used in the construction of the submarine hull.
28. Draw the typical cross section of a Bomb. Explain the various functions of **10** CO1 [K₃]
components of a bomb and fuse in detail.
29. Analyze the self-protection strategies and techniques with suitable examples **10** CO2 [K₄]
30. Define stalling. Derive a relation for stalling speed of an aircraft in straight and **10** CO2 [K₄]
level flight.
31. List the various materials used for military platforms. Discuss the properties, **10** CO2 [K₄]
advantages and disadvantages of Kevlar.
