

AE8604 AIRCRAFT SYSTEM

IMPORTANT QUESTIONS AND QUESTION BANK

UNIT I

2-Marks

1. Aircraft Design Requirements details?
2. Define Importance of weight?
3. Define load factor?
4. Draw Velocity - Load factor diagram?
5. Write Basic flight loading conditions?
6. Symmetrical measuring loads in flight write any two points?
7. Define role of users?
8. Write stages in airplane design?
9. Write any two points at classification of function?
10. Write two main types of airplanes?

Part-B

1. Explain project feasibility studies and their complete set of specifications for the airplane?
2. Explain the classification of airplanes? Classification of airplanes according to function?
3. Write a notes on Influence of the function of airplane on specifications/design requirements?
4. Explain Influence of the function of airplane on specifications/design requirements?
5. Explain briefly about the types of tails and their function details in air plane?
6. Primary requirements for Civil Aircraft? Primary requirements for Military Aircraft – FIGHTERS-Tactical?
7. Tailless and Flying Wing Design? Canard design? Both are write the merits and demerits?
8. Explain about the aircraft loads?
9. Derive the explain of vn diagram and give their working in flight arrangements?
10. Explain about the Developments of Aircraft upto 1960's?
11. Explain Air plane data sheet ?

UNIT II

2-Marks

1. Define basic wing design?
2. Define maximum flight speed?

3. Steady Climb – maximum rate of climb (R/C)max?
4. Define Turning flight?
5. Estimation of empty-weight fraction (W_e/W_0)?
6. Types of airplane?
7. Define remarks of drag polar?
8. Define air foil selection?
9. Define air foil geometry?
10. Define wings function?

Part-B

1. Dependence of airplane performance of airplane parameters and atmospheric characteristics?
2. Explain Range and endurance for airplanes with engine-propeller combination and with jet engine?
3. Explain about the features of Take off distance (st_0)?
4. estimate of the gross weight (W_0) is necessary for further progress in the design process and explain it?
5. Derive the explain of Weight fractions for various segments of mission?
6. Fuel fraction for descent, landing and taxiing and their explain about the functions and applications?
7. Write a notes on (i) wing design (ii) features of wind design
8. Presentation of aerodynamic characteristics of airfoils their explain in details?
9. Explain geographical characteristics of air foil and air foil shape and ordinates?
10. Explain about (i) NACA 4 digit series (ii) NACA 5 digit series (iii) NACA 6 digit series?
11. Explain Finite Wing Geometry Definitions?
12. Write a note on Two-Dimensional and Three-Dimensional Lift Coefficient Curves?

UNIT-3

2-Marks

1. Define Aircraft landing gear?
2. Write Landing Gear Arrangement?
3. Tail Wheel-Type Landing Gear?
4. Tricycle-Type Landing Gear notes?
5. Types of landing gears?
6. Define Bungee Cord?
7. Define Shock Struts?

8. Write different designs of shock strut?
9. Configuration Selection functions?
10. Angles of Pitch and Roll during Takeoff and Landing?

Part-B

1. Explain the Different kinds of landing gears?
2. Explain the details of Landing Gear Arrangement?
3. Explain Tricycle-type landing gear is used on large and small aircraft with benefits?
4. Explain classification of aircraft landing gear and write their characteristics?
5. Write a notes on Shock Absorbing and Non-Shock Absorbing Landing Gear?
6. Explain about the Leaf-Type Spring Gear?
7. Explain briefly about the landing gear concepts selection?
8. Geometric definition in relation to the pitch and roll angles and their functions?
9. Write the notes on Static stability of an aircraft at touchdown and during taxiing?
10. (i) Aircraft Turning Radii (ii) Centerline-guidance Taxiing (iii) Landing Gear Disposition Constraints?

UNIT-4

2-Marks

1. Define Estimation of centre of gravity?
2. Functions of Empennages?
3. Define stability?
4. Define control?
5. Explain critical flight stages?
6. Write Different empennage shapes?
7. Types of Empennages of conventional aircraft configurations?
8. Define tail features?
9. Define three-surface configuration?
10. Design Rules and its functions?

Part-B

1. Estimation of Horizontal and Vertical tail volume ratios. Choice of power plant and various options of locations, considerations of appropriate air-intakes?

2. Empennages create a force that acts upon a lever arm. Consequently a moment is created through empennages and their function?
3. Write a distinction is made between static stability and dynamic stability?
4. Explain aircraft must be sufficiently controllable in all critical flight states (CS 25.143 to CS 25.149)?
5. Explain their Empennages of conventional aircraft configurations and their applications?
6. Examples of aircrafts with dorsal fin and ventral fin and explain the other features of tails?
7. Write a notes on design rules and give their explain?
8. Lifting canard or tandem wing is designed like wings and give their tables?
9. Explain about the Design According to Tail Volume?
10. Write as briefly explain in Elevator and Rudder?
11. Explain about the function of power plant and Power plant Characteristics?
12. Gas turbines and explain about the working functions and give their advantages disadvantages?
13. Write a notes on Flight Regimes – Propeller Engines?

UNIT-V

2-Marks

1. Define super critical wings?
2. Define trailing-edge thickness?
3. Draw NACA 64 series Air foil?
4. Types of super critical air foil?
5. Define slotted supercritical air foil?
6. Define integral super critical air foil?
7. Schematic of the flow field over supercritical airfoil?
8. Define critical Mach number?
9. Explain Reduction in drag with Mach number?
10. Define CCV?

Part-B

1. Explain about the notes on super critical wings and briefly explain?
2. Write a note on Effects of Trailing-Edge Thickness?

3. Explain about the development of super critical air foil and give the diagram?
4. Explain about the Schematic of the flow field over supercritical airfoil?
5. Designation for Supercritical Airfoils and explain about the design guidelines?
6. Write down the features of super critical air foil?
7. Derive and explain the KORN equation?
8. Briefly explain about the function of CCV?
9. Write a shortnotes on (A) Traditional Aircraft Design Process (B) Control-Configured-Vehicle Design Process?
10. Explain about the VTOL/STOL give the types of working and their function?
11. Design and layout of flying their function?
12. Explain the details about Fly-by-wire system? Explain auto pilot system?
13. A340 fly-by-wire layout, including hydraulic system indications give explain?
14. Explain the points of control engine and their functions?
15. Write control engine their safety and advantages disadvantages?

www.binils.com