



B.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Second Semester

AERONAUTICAL ENGINEERING

AER101:Elements of Aeronautics

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The lift produced by the horizontal tail at steady level flight act in _____direction.
 - a) Upward
 - b) No lift produced
 - c) Downward
 - d) 30° to vertical axis
2. _____ Layer of atmosphere having constant temperature.
 - a) Tropopause
 - b) Stratosphere
 - c) Isothermal layer
 - d) Mesosphere
3. Stiffeners are used in _____construction.
 - a) Truss
 - b) Semi-monocoque
 - c) Monocoque
 - d) Geodesic
4. Titanium alloys are used in _____section of turbojet engine
 - a) Combustion chamber
 - b) Compressor
 - c) Turbine
 - d) Nozzle
5. _____ engines are used in fighter aircraft
 - a) Turbo shaft
 - b) Turbojet
 - c) Turbo prop
 - d) Ramjet
6. _____control used to increase the lift of a helicopter.
 - a) Collective pitch
 - b) Cyclic pitch
 - c) Rudder
 - d) Gear box
7. A propellant combination that ignite simply on contact with one another is called as _____propellant
 - a) Bi- propellant
 - b) Mono propellant
 - c) Hypergolic propellant
 - d) Cryogenic proellant

22. a) List the properties of the following.
- (i).Titanium. (7)
 - (ii). composite materials. (7)

(OR)

- b) What are the types of construction methods used for aircraft construction?
Explain each type construction and compare relative merits and demerits?

23. a) (i) Describe the classification of propellers. (7)
- (ii) Explain the helicopter control system. (7)

(OR)

- b) Illustrate the construction, working principle, advantages, disadvantages and applications of turbo fan engine.

24. a) Explain the following
- (i)Life support system in space. (7)
 - (ii) Re-entry heating. (7)

(OR)

- b) Describe the hybrid rockets with its working principle. State its advantages and disadvantages.

25. a) Describe the types and applications of unmanned aerial vehicles.

(OR)

- b) Analyze the working principle of the following:
- (i)HALE. (7)
 - (ii)UCAVs. (7)
