Reg. No. ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : X10028

B.E/B.Tech. DEGREE EXAMINATIONS NOVEMBER / DECEMBER 2020

Third Semester

Aeronautical Engineering

AE8302-Elements of Aeronautical Engineering

(Regulations 2017)

Time: 3 Hours   Answer ALL Questions   Max. Marks: 100

PART- A (10 x 2 = 20 Marks)

1. What are the natural creatures with flying abilities?

2. Draw a neat Hot air balloon aircraft and indicate the parts.

3. Who are the first few persons recognized as Aeronautical engineers when there was no discipline or course available for public?

4. Draw a neat diagram of a biplane in old and new generation categories.

5. How is the earth's atmosphere classified?

6. Draw a general airfoil cross-section and indicate their important parts for Aeronautics.

7. Why do we need propulsion unit for airplanes?

8. Why do we require combustion process in Engines?

9. Draw a neat diagram of an airplane without skin.

10. What is factor of safety for airplane(s)?

PART- B (5 x 13 = 65 Marks)

11. a) Write elaborately on first man-powered airplane efforts and various nation's efforts.

    OR

    b) Compare bird flying and elementary stage aircraft flying by human beings all over the world.

12. a) Provide a broad-classification of aircraft.

    OR

    b) How are the aircraft useful to human beings?

13. a) How are the control surface activated? What is their corresponding response on airplanes?

OR

b) Write short notes on:
1. Drag, lift and moments on airfoils/Wings.
2. Mach number and Reynolds number effects on Non-dimensional Characteristics of airplanes.
3. How the parameters of Atmosphere inter-related.

14. a) Classify Rockets and Rocket Engineers.

OR

b) How is the AERONAUTICOLOGY different from Aerospaceology?

15. a) What are the various ways of constructing airplanes in industries? Explain each one of them.

OR

b) Write short notes on:
1. Classification of airplanes based on airfoils and wings.
2. Requirements from structures.
3. Parametric representation for recognition.
4. Equations involved in structures (simple).

PART- C (1 x 15 = 15 Marks)

16. a) i) How are the developments in Aeronautics useful for civil and military applications?
ii) What are the manoeuvres available in Aeronautics and the usefulness of various aircraft / limitations of aircraft in achieving them?

OR

b) During war time and difficult times of world level leaders, how are aeronautical concepts helpful?
[Calculate: Stone throwing, Spear throwing, Arrowing with bow, Rifle Firing, Canon Firing, Simple Missile Firing, Ballistic Missile Firing, Bombs and aircraft as weapons etc].