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Question Paper Code: AAEB54



INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)

B.Tech V Semester End Examinations (Regular), February – 2021

Regulation: IARE–R18

AIRFRAME STRUCTURAL DESIGN

Time: 3 Hours

(ME)

Max Marks: 70

Answer any Four Questions from Part A
Answer any Five Questions from Part B

PART – A

1. Illustrate key points on the advances took during jet engine development. [5M]
2. Explain in detail about the different types of drag. [5M]
3. Discuss about dynamic stability with required graph. [5M]
4. Describe in detail monocoque fuselage construction with help of diagrams. [5M]
5. Write in detail about the Gemini mission. [5M]
6. Explain the attempts and success during space exploration. [5M]
7. Define Wing loading and Explain in detail about effects in stall speed, climbing, ground roll. [5M]
8. Describe the airplane geometry with a neat sketch and discuss about the two types of stability in detail. [5M]

PART – B

9. Explain the different layers of atmosphere with a graph showing the temperature and pressure variation. [10M]
10. Discuss the terms i) GCR ii) Microgravity iii) Solar activity iv) Solar flares [10M]
11. Illustrate in detail about aerodynamic forces on aircraft. [10M]
12. Draw a neat sketch of an airfoil section and Explain in detail. [10M]
13. Derive the equation of motion for pull up and pull down maneuver. [10M]
14. An aero plane flying horizontally at an altitude of 490m with a speed of 180kmph drops a bomb. Calculate the horizontal distance at which it hits the ground. [10M]
15. List out the uses of aluminum alloy, titanium, stainless steel in aerospace industry [10M]
16. Describe the working principle of turbo fan engine with help of neat sketch [10M]
17. Explain about space shuttle mission and space shuttle with their achievements and mission procedures. [10M]
18. Write in detail about operational roles of propulsion system of satellite [10M]