CBCS SCHEME

USN | | | | | | | | | | |

15AE82

Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
Flight Vehicle Design

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain in brief the aircraft design stages. **(08 Marks)**

b. Explain the take-off weight build up and the empty weight estimation for a new aircraft design. **(08 Marks)**

OR

2 a. Discuss how to select air foil for the aircraft design. **(08 Marks)**

b. Discuss the gross weight estimation of new aircraft. **(08 Marks)**

Module-2

3 a. What are the volume considerations while sizing fuselage. **(08 Marks)**

b. Discuss flat warp lifting. **(08 Marks)**

OR

4 a. Explain horizontal tail and vertical tail sizing. **(08 Marks)**

b. Draw V-n diagram and gust envelope. **(08 Marks)**

Module-3

5 a. Discuss the propulsion selection criteria. **(08 Marks)**

b. Describe installed engine Thrust correction. **(08 Marks)**

OR

6 a. Discuss the effect of altitude and velocity variation on engine performance. **(08 Marks)**

b. Discuss the lift enhanced design for an aircraft. **(08 Marks)**

Module-4

7 Define longitudinal static stability and explain the effects of airframe components to longitudinal static stability. **(16 Marks)**

OR

8 a. Discuss Aileron sizing and Rudder sizing. **(08 Marks)**

b. Explain the importance of "Cooper Harper" rating of an aircraft by the pilot. **(08 Marks)**

Module-5

9 Write a note on the following :

i) Flight control system

ii) Landing gear system. **(16 Marks)**

OR

10 Write a note on the following :

i) Air conditioning system

ii) Fuel system. **(16 Marks)**

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