CBCS SCHEME

USN

21AE/AS755

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Basics of Flight Simulation

Time: 3 hrs.

Max. Marks: 100

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Explain changing role of simulation. **(10 Marks)**

b. Write a note on Training Transfer and define the measure of training transfer equation. **(10 Marks)**

OR

2 a. Write the historical perspective for the first 40 years of flight and also explain the digital and analogue computing. **(10 Marks)**

b. Explain advances of the microelectronics revolution in Moore's law. **(10 Marks)**

Module-2

3 Draw a flow chart for the organization of a flight simulator to overview of flight simulation techniques and with the help of flow chart, explain the following :

(i) Aerodynamic Model.
(ii) Data Acquisition Model.
(iii) Gear Model.

(20 Marks)

OR

4 Explain the following :

(i) Navigation system
(ii) Instrument Displays
(iii) Control loading action control surface
(iv) Visual system

(20 Marks)

Module-3

5 a. With the help of Euler's Forward method, explain first order method. **(10 Marks)**

b. Write a note on Real-time computing. **(10 Marks)**

OR

6 a. Compute Differential Equations. **(10 Marks)**

b. Define numerical integration. Explain approximation method and Higher order method. **(10 Marks)**

Module-4

7 a. Illustrate the standard Atmospheric model. **(10 Marks)**

b. Explain the Aerodynamic list forces with necessary sketches and graph. **(10 Marks)**

OR

8 a. With necessary graph and equation, explain Piston Engine and Jet Engine. (10 Marks)

b. With neat labeled sketch, explain Aerodynamic moments and Aerodynamic Derivatives. (10 Marks)

Module-5

9 Explain the following Aircraft Displays:
(i) Attitude Indicator
(ii) Altimeter.
(iii) Airspeed Indicator
(iv) Compass Card (20 Marks)

OR

10 Write a short note on following :
(i) Automatic Direction Finding
(ii) VHF Omni directional Range
(iii) Inertial Navigation system
(iv) Global Positioning systems (20 Marks)

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