

## Unit 6 - Week 4

## Course outline

How does an NPTEL online course work?

## Week 0

## Week 1

## Week 2

## Week 3

## Week 4

Lecture 22 : Aircraft Configuration Design

Lecture 23 : Podded Engines on Wings

Lecture 24 : Wing Sweep

Lecture 25 : Canards and Flying Wing

Lecture 26 : Three Surface Aircraft

Lecture 27 : Winglets

Lecture 28 : Thrust Vectoring

Lecture 29 : Few Novel Concepts\_01

Lecture 30 : Aircraft Configuration Design- Closing Remarks

Quiz : Assignment 4

Assignment-4 Solutions

Weekly feedback

Download Videos

## Week 5

## Week 6

## Week 7

## Week 8

## Week 9

## Week 10

## Week 11

## Week 12

## Live Session

## Text Transcripts

## Assignment 4

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2020-10-14, 23:59 IST.**

1) What is/are the benefit(s) of using a Blended Wing Body (BWB) configuration for a transport aircraft? 1 point

- High Range and Endurance  
 Good Structural Load Distribution  
 Quick Emergency Evacuation  
 Enhanced Luxury and Comfort for passengers

No, the answer is incorrect.

Score: 0

Accepted Answers:

*High Range and Endurance*

*Good Structural Load Distribution*

*Enhanced Luxury and Comfort for passengers*

2) Which of the following statements is/are TRUE for engines mounted in pods below the wings in a passenger transport aircraft? 1 point

- Reduction in wing root bending moment  
 Ease in access for maintenance  
 Passenger safety  
 Lower asymmetric yawing moment if one engine fails

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Reduction in wing root bending moment*

*Ease in access for maintenance*

*Passenger safety*

3) Which of the following statements is/are TRUE with respect to Thrust Vectoring? 1 point

- It improves the takeoff and landing performance  
 It supports the vertical takeoff and landing ability  
 It increases the the range of the aircraft  
 It increases the maneuverability

No, the answer is incorrect.

Score: 0

Accepted Answers:

*It improves the takeoff and landing performance*

*It supports the vertical takeoff and landing ability*

*It increases the maneuverability*

4) The key advantage of using the Canard Surface is 1 point

- skin friction drag is reduced  
 the area of the horizontal stabilizer is reduced  
 the aircraft can be trimmed near minimum drag in the wide range of CG  
 the stealth characteristics is increased

No, the answer is incorrect.

Score: 0

Accepted Answers:

*the aircraft can be trimmed near minimum drag in the wide range of CG*

5) Which of the following aircrafts have forward swept wings? 1 point

- Grumman X-29  
 Sukhoi Su-47  
 Grumman F-14 Tomcat  
 General Dynamics F-111 Aardvark

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Grumman X-29*

*Sukhoi Su-47*

6) Which of the following statements is/are TRUE with respect to Wing Sweep? 1 point

- Increases the wing weight for the fixed span  
 Delays the drag divergence mach number  
 Adjusts the aerodynamic center relative to the CG  
 Reduces the wing cross-sectional area

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Increases the wing weight for the fixed span*

*Delays the drag divergence mach number*

*Adjusts the aerodynamic center relative to the CG*

*Reduces the wing cross-sectional area*

7) Which of the following is/are provided to improve the flow quality over wings? 1 point

- Strake  
 Fence  
 Vortex Generator  
 Winglet

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Strake*

*Fence*

*Vortex Generator*

*Winglet*

8) Which of the following is/are the design features of the Piaggio-180 Avant? 1 point

- Three Surface Design (Canard - Wing - Tail)  
 Pusher Engine Configuration  
 Tapered Swept Back Wing  
 T-Tail Configuration

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Three Surface Design (Canard - Wing - Tail)*

*Pusher Engine Configuration*

*T-Tail Configuration*

9) Which of the following is/are the feature(s) of the good transport aircraft? 1 point

- Aerodynamically efficient  
 Ability to trim near minimum drag for wide range of CG  
 Low Propulsive Efficiency and Emission Levels  
 Ability to build easily and lower maintenance costs  
 Landing gear should be close to CG

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Aerodynamically efficient*

*Ability to trim near minimum drag for wide range of CG*

*Ability to build easily and lower maintenance costs*

*Landing gear should be close to CG*

10) Which of the following is/are the benefits by providing the Winglets? 1 point

- Reduction in the strength of the wingtip vortices  
 The equivalent span extension without increasing the root bending moment  
 Reduction in the skin friction drag  
 Reduction in the wing weight

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Reduction in the strength of the wingtip vortices*

*The equivalent span extension without increasing the root bending moment*