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reviewer4@nptel.iitm.ac.in ▾

**NPTEL** (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » **Introduction to Aerospace Engineering/Flight**  
(course)

Announcements (announcements)    **About the Course** ([https://swayam.gov.in/nd1\\_noc19\\_ae05/preview](https://swayam.gov.in/nd1_noc19_ae05/preview))

Ask a Question (forum)    Progress (student/home)    Mentor (student/mentor)

## Unit 8 - Week 6

### Course outline

How to access the portal?

Preliminaries for the Course

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

- Lecture 30 : Critical Mach Number (unit? unit=36&lesson=46)
- Lecture 31 : Wave Drag (unit? unit=36&lesson=47)
- Lecture 32 : Swept Wings

## Assignment 6

The due date for submitting this assignment has passed. **Due on 2019-09-11, 23:59 IST.**  
As per our records you have not submitted this assignment.

The following questions **may have more than one correct answers**  
Read and analyse the question carefully before selecting the answer (s).  
Marks will be awarded only if all the correct answers are selected.  
No partial marks will be awarded.

1) Critical Mach number of an aerofoil depends upon

1 point

- Thickness
- Camber
- Leading Edge Radius
- All of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:

*Thickness*  
*Camber*

2) The Drag Divergence Mach number of an airfoil is

1 point

- always higher than the critical mach number
- a fixed number for a given airfoil
- the Mach number at which a shock wave first appears on the airfoil
- equal to the critical Mach number at zero angle of attack

No, the answer is incorrect.  
Score: 0

Accepted Answers:

(unit?  
unit=36&lesson=48)

- Lecture 33 :  
Introduction to  
Drag and Types  
of Drag (unit?  
unit=36&lesson=49)
- Lecture 34 :  
Factors  
Affecting  
Induced Drag  
(unit?  
unit=36&lesson=50)
- Lecture 35 :  
Skin Friction  
Drag (unit?  
unit=36&lesson=51)
- Lecture 36 :  
Tutorial on  
Critical Mach  
Number and  
Wave Drag  
(unit?  
unit=36&lesson=52)
- Quiz :  
Assignment 6  
(assessment?  
name=103)**
- Weekly  
Feedback (unit?  
unit=36&lesson=119)
- Assignment 6  
Solutions (unit?  
unit=36&lesson=136)

**Week 7**

**Week 8**

**Week 9**

**Week 10**

**Week 11**

**Week 12**

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*always higher than the critical mach number*

3) One of the criteria for high speed airplanes is that the Critical Mach number should be as high as possible. Therefore, high-speed subsonic airplanes are usually designed with **1 point**

- Thick airfoils
- Laminar flow airfoils
- Thin airfoils
- Diamond airfoils

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Thin airfoils*

4) Wave Drag can be reduced by using **1 point**

- Thin Wings
- Wing Sweep
- Supercritical airfoils
- All of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*All of the above*

5) The key benefit(s) of Oblique Wing are **1 point**

- Reduction in Wave Drag
- Lower Structural Mass
- Easier to Trim in level flight
- Gentler Stalling characteristics

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Reduction in Wave Drag  
Lower Structural Mass*

6) The Critical Mach Number is always **1 point**

- Higher than Drag Divergence Mach Number
- Lesser than Drag Divergence Mach Number
- Lesser than 1.0
- Higher than 1.0

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Lesser than Drag Divergence Mach Number  
Lesser than 1.0*

7) The key drawback(s) of a Variable Sweep Wing is **1 point**

- Higher Wave Drag at supersonic speeds
- Higher Structural Mass
- Reduction in Lateral Stability
- More Maintenance problems

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Higher Structural Mass*  
*More Maintenance problems*

8) Which of the following statement(s) are true about Form Drag ?

**1 point**

- It is also called Pressure Drag
- It is created by objects deflecting the air flow
- It is created by objects disrupting the air flow
- It increases if the cross-sectional area of an aircraft increases

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*It is also called Pressure Drag*  
*It is created by objects deflecting the air flow*  
*It is created by objects disrupting the air flow*  
*It increases if the cross-sectional area of an aircraft increases*

9) Parasite Drag is

**1 point**

- inversely proportional to the square of the EAS
- directly proportional to the square of the EAS
- inversely proportional to the square root of the EAS
- directly proportional to the square root of the EAS

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*directly proportional to the square of the EAS*

10) Induced Drag is

**1 point**

- directly proportional to the square root of the gross mass
- directly proportional to the square of the gross mass
- inversely proportional to the square root of the gross mass
- inversely proportional to the square of the gross mass

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*directly proportional to the square of the gross mass*

