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**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 10 - Week 8

### Course outline

How to access the portal?

Preliminaries for the Course

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

● Lecture 41 :  
Steady Level Flight (unit? unit=57&lesson=60)

● Lecture 42 :  
Power Required

## Assignment 8

The due date for submitting this assignment has passed. **Due on 2019-09-25, 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) Which of the following statement(s) is/are TRUE with respect to Steady Level Flight **1 point**?

- As speed increases, the angle of attack also increases
- Thrust required is minimum when  $CL / CD$  is maximum
- Power required is minimum when  $CL^{3/2} / CD$  is maximum
- Lift = Weight  $\pm$  Tail Load, and Thrust = Drag

No, the answer is incorrect.  
Score: 0

Accepted Answers:

*Thrust required is minimum when  $CL / CD$  is maximum*  
*Power required is minimum when  $CL^{3/2} / CD$  is maximum*  
*Lift = Weight  $\pm$  Tail Load, and Thrust = Drag*

2) Fairchild Republic A-10 twin jet attack aircraft with  $S = 47 \text{ m}^2$ ,  $AR = 6.5$ ,  $C_{D,0} = 0.032$ , **1 point**  
 $e = 0.87$  and Weight = 1,03,047 N. The airplane is equipped with two jet engines with 40,298 N of static thrust at sea-level. Calculate the maximum velocity at sea level.

- 295 m/s
- 300 m/s

for the Steady Level Flight (unit? unit=57&lesson=61)

Lecture 43 : Steady Level Flight : A Pilot's View (unit? unit=57&lesson=62)

Lecture 44 : Tutorial on Steady Level Flight (unit? unit=57&lesson=63)

Quiz : Assignment 8 (assessment? name=112)

Weekly Feedback (unit? unit=57&lesson=121)

Assignment 8 Solutions (unit? unit=57&lesson=138)

**Week 9**

**Week 10**

**Week 11**

**Week 12**

**Download Videos**

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395 m/s

400 m/s

No, the answer is incorrect.

Score: 0

Accepted Answers:

*295 m/s*

3) An aircraft has a Zero-lift drag coefficient  $C_{D,0} = 0.0223$ , wing aspect ratio  $AR_{wing} = 10.0$ , and Oswald's efficiency factor  $e = 0.7$ . The thrust required for steady level flight will be minimum when the aircraft operates at a lift coefficient of **1 point**

0.65

0.70

0.75

0.80

No, the answer is incorrect.

Score: 0

Accepted Answers:

*0.70*

4) Let an airplane be in a steady level flight be trimmed at a certain speed. A level and steady flight at a higher speed could be achieved by changing **1 point**

Engine throttle only

Elevator only

Throttle and elevator together

Rudder only

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Throttle and elevator together*

5) Data for an airplane are given as follows: Weight  $W = 30$  kN, thrust available at sea-level  $T = 4000$  N, Wing Planform Area  $S = 30$  m<sup>2</sup>, Maximum Lift Coefficient  $CL_{max} = 1.4$ , and Drag Coefficient  $CD = 0.015 + 0.024CL^2$ . Assume air density at sea level  $\rho_a = 1.22$  kg/m<sup>3</sup>. Minimum and maximum speeds of the airplane in level flight condition at sea-level in m/s respectively are, **1 point**

17.35 and 180

17.36 and 34.22

34.22 and 119.46

17.36 and 119.46

No, the answer is incorrect.

Score: 0

Accepted Answers:

*34.22 and 119.46*

6) An aircraft in trimmed condition has zero pitching moment at **1 point**

Its aerodynamic center

Its center of gravity

50% of its wing root chord

25% of its mean aerodynamic chord

No, the answer is incorrect.

Score: 0

Accepted Answers:  
*Its center of gravity*

7) A conventional low speed aircraft had the following aerodynamic characteristics: **1 point**  
 $C_{D,0} = 0.020$ ,  $e = 1.0$ . The aircraft was flown to maintain a steady level flight and for minimum thrust required, at a lift coefficient of  $C_L = 0.8$ . The numerical value of the aspect ratio of the wing is

- 10.5
- 9.5
- 11
- 8

No, the answer is incorrect.  
 Score: 0

Accepted Answers:  
*10.5*

8) A pilot was flying a single engine propeller aircraft and maintaining a steady level **1 point**  
 flight at a lift coefficient,  $C_L = 0.5$  at an altitude of 500 m. Due to some emergency, at the same altitude (500 m) the pilot had to fully deploy the landing gear. If the pilot wants to maintain steady level flight at the same  $C_L = 0.5$  and at the same altitude, which of the following control actions should the pilot undertake:

- Move the elevator up and decrease the throttle
- Move the elevator up and increase the throttle
- Move the elevator down and increase the throttle
- Move the elevator down and decrease the throttle

No, the answer is incorrect.  
 Score: 0

Accepted Answers:  
*Move the elevator up and increase the throttle*

9) Which one of the following flight instruments is used on a aircraft to determine its **1 point**  
 attitude in flight?

- Vertical Speed Indicator
- Altimeter
- Artificial Horizon
- Turn-bank Indicator

No, the answer is incorrect.  
 Score: 0

Accepted Answers:  
*Artificial Horizon*

10) Lift Force acting on an aircraft climbing vertically up is **1 point**

- Equal to its weight
- Zero
- Equal to the drag
- Equal to the thrust

No, the answer is incorrect.  
 Score: 0

Accepted Answers:  
*Zero*

