Assignment week - 12

1) For a conventional aircraft what will be the sign of \(
\frac{Cn_\beta}{C\beta}
\)

- +ve
- -ve
- +ve or -ve depending upon rudder size
- +ve or -ve depending upon the size of vertical stabilizer

Accepted Answers:
- -ve

2) For a conventional aircraft what will be the sign of \(C_{L\alpha}\) and \(C_{L\alpha}\) respectively

- +ve, +ve
- +ve, -ve
- -ve, +ve
- -ve, -ve

Accepted Answers:
- +ve, +ve

3) Which of the following is responsible for pitch damping and yaw damping respectively?

- \(C_{l\beta}\), \(C_{n\beta}\)
- \(C_{l\eta}\), \(C_{l\beta}\)
- \(C_{l\eta}, C_{n\eta}\)
- \(C_{n\eta}, C_{m\eta}\)

Accepted Answers:
- \(C_{m\eta}, C_{n\eta}\)

4) In a conventional aircraft \(C_{l\beta}\) is primarily contributed by

- Horizontal stabilizer
- Vertical stabilizer
- Fuselage
- Wings
5) Pitching moment coefficient due to the lag in the downwash field can be given as?

- $-2C_{L\alpha_t} \eta V_H \frac{l_t}{c} \frac{d\epsilon}{d\alpha}$
- $2C_{L\alpha_t} \eta V_H \frac{l_t}{c} \frac{d\epsilon}{d\alpha}$
- $-C_{L\alpha_t} \eta V_H \frac{l_t}{c} \frac{d\epsilon}{d\alpha}$
- $C_{L\alpha_t} \eta V_H \frac{l_t}{c} \frac{d\epsilon}{d\alpha}$

Accepted Answers:
Vertical stabilizer

6) For an aircraft, the roots of the longitudinal characteristic equation are as shown in the figure.

For phugoid mode the value of damping ratio and natural frequency (rad/sec) will be respectively.

- 0.1 & 0.4
- 0.1 & 0.04
- 0.01 & 0.4
- 0.01 & 0.04

Accepted Answers:
0.01 & 0.4