

Unit 9 - Week 7

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Assignment 7

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

Due on 2020-11-04, 23:59 IST.

1) What is the typical value of payload weight fraction for a transonic passenger airliner? 1 point

- Approx. 50%
- Approx. 25%
- Approx. 75%
- 100%

No, the answer is incorrect.
Score: 0

Accepted Answers:
Approx. 25%

2) What can be said about coefficients A and C in the empirical formula for empty weight fraction? 1 point

$$\frac{W_E}{W_o} = A W_0^C K_{VS}$$

- A is positive and C is negative
- A is negative and C is negative
- A is negative and C is positive
- A is positive and C is positive

No, the answer is incorrect.
Score: 0

Accepted Answers:
A is positive and C is negative

3) Calculate the Empty-Weight Fraction for the twin turbo-prop engine powered aircraft with gross takeoff weight of around 20,000 kg ranges from 1 point

- 0.20 to 0.30
- 0.30 to 0.40
- 0.50 to 0.60
- 0.60 to 0.70

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.50 to 0.60

4) Which of these statement(s) is/are TRUE for the ratio of Empty Weight Fraction of a specific type of aircraft? 1 point

- It decreases as the Gross Takeoff Weight increases
- It increases as the Gross Takeoff Weight increases
- It is a fixed number, and always less than 1.0
- It is fixed number, and always more than 1.0

No, the answer is incorrect.
Score: 0

Accepted Answers:
It decreases as the Gross Takeoff Weight increases

5) Which of these factors affect the estimation of Mission fuel weight? 1 point

- Type of mission
- Aircraft aerodynamics
- Engine Specific Fuel Consumption
- Reserve Fuel Fraction

No, the answer is incorrect.
Score: 0

Accepted Answers:
Type of mission
Aircraft aerodynamics
Engine Specific Fuel Consumption

6) What is the key assumption in estimation of mission fuel fraction weight by multiplying all the segment mission fuel weight fractions? 1 point

- Fuel consumed in each mission segment is proportional to aircraft design gross weight
- Amount of Reserve fuel carried is ignored
- Fuel consumed in each mission segment is proportional to aircraft weight in that segment
- Fuel consumption in all segments except Cruise and Loiter can be ignored

No, the answer is incorrect.
Score: 0

Accepted Answers:
Fuel consumed in each mission segment is proportional to aircraft weight in that segment

7) Estimate the maximum take-off weight for a commercial civil transport aircraft which is to carry 400 passengers along with their luggage of 50 kg per passenger. The aircraft must be able to fly with a cruise speed of Mach 0.75 and covering a range of 12,000 km. Assume, Fuel fraction for taxi, climb, descend and landing are as follows 0.98, 0.97, 0.99 & 0.997 respectively, The Specific Fuel Consumption is = 0.283×10^{-4} kg/Ns , for cruise (L/D) is 2.0. Assume Loiter of 30 Min & Assume Empty Weight Ratio as 0.5.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 150000 , 170000

0 points

8) Reserve Fuel is carried in an aircraft to take care of 1 point

- Fuel blocked in the pipelines
- Fuel required for Loiter and Descent phases
- Fuel required for Division and Holding phases
- Fuel required to take care of extra distance travelled due to navigation related errors and enroute weather conditions

No, the answer is incorrect.
Score: 0

Accepted Answers:
Fuel blocked in the pipelines
Fuel required for Division and Holding phases
Fuel required to take care of extra distance travelled due to navigation related errors and enroute weather conditions

9) The empty mass fraction of an aircraft is 0.52, Fuel Mass Fraction is 0.35 and the Maximum Takeoff Mass of 80,900 Kg. Calculate the Payload Mass in kg of the Aircraft if the Crew mass is 517 kg.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 9500 , 10500

1 point