Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

- Lecture 52: Pressure Height
- Lecture 53: Tutorial Problem 11 on Pressure Height Calculation
- Lecture 54: Sea Level Inflation Fraction
- Lecture 55: Flight above Pressure Height
- Lecture 56: Effect of Change in Operating Altitude
- Lecture 57: Tutorial Problem 12 on Lifting Gas Loss
- Lecture 58: Descent Following Exceedance
- Lecture 59: Pressure Height for other LTA Vehicles
- Lecture 60: Dicussion of Practice Questions
- Quiz : Assignment 7
- Assignment solutions-7
- Weekly Feedback
- Download Videos

Week 8

Week 9

Week 10

Week 11

Week 12

Practice Crossword

Text Transcripts

Live Session

Assignment 7

The due date for submitting this assignment has passed.

Due on 2021-03-10, 23:59 IST.

As per our records you have not submitted this assignment.

1) Pressure Height of an airship is defined as ***1 point***

- The altitude at which ballonet volume becomes zero
- The maximum altitude that can be ever attained
- The usual operating altitude
- The altitude at which superpressure becomes zero

No, the answer is incorrect.
Score: 0

Accepted Answers:
The altitude at which ballonet volume becomes zero

2) An airship with envelope volume of 1500 m^3 operating at an altitude having atmospheric pressure as P_{s1} and ambient temperature T_{A1} with inflation fraction I_1 and then the same airship operates at an altitude having atmospheric pressure as P_{s2} and ambient temperature T_{A2} with inflation fraction I_2. (ignoring superhet and superpressure) ***1 point***
Which of the following is/are correct relationship(s) between I_1 and I_2
Where, $T_S=T_A+\Delta T_{SH}$

- $I_2=\frac{\delta_1}{\delta_2}\frac{\theta_{s_2}}{\theta_{s_1}}I_1$
- $I_2=\frac{\sigma_{s_1}}{\sigma_{s_2}}I_1$
- $I_2=\frac{P_{s_1}}{P_{s_2}}\frac{T_{s_2}}{T_{s_1}}I_1$
- $I_1=\frac{\sigma_{s_1}}{\sigma_{s_2}}I_2$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$I_2=\frac{\delta_1}{\delta_2}\frac{\theta_{s_2}}{\theta_{s_1}}I_1$

$I_2=\frac{\sigma_{s_1}}{\sigma_{s_2}}I_1$

$I_2=\frac{P_{s_1}}{P_{s_2}}\frac{T_{s_2}}{T_{s_1}}I_1$

3) An airship having envelope volume of 5000 m^3 and ballonet volume of 1500 m^3 operating at its Pressure Height, what will be the pressure height inflation fraction for this airship? ***1 point***

- $I_{PH} = 0$
- $I_{PH} = 1$
- $0 < I_{PH} < 1$
- $I_{PH} > 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$I_{PH} = 1$

4) An aerostat having envelope volume of 1000 m^3 with inflation fraction at sea level as 85% operating at an altitude having ambient pressure and temperature as 0.1 MPa and 25°C with superheat of 5°C.
Calculate the relative density at pressure height

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.75,0.85

1 point

5) Is flight of an airship above Pressure Height possible? ***1 point***

- Yes
- No
- May be
- Can't say anything

No, the answer is incorrect.
Score: 0

Accepted Answers:
Yes

6) An airship is operating at an altitude well below its Pressure Height. If the airship undergoes an increase in its operational height, what will be the change in its net static lift (ΔL_N) ? ***1 point***

- $\Delta L_N = 0$
- $\Delta L_N < 0$
- $\Delta L_N > 0$
- No comments can be made

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\Delta L_N = 0$

7) If there is an increase in the operational height of an airship above the Pressure Height, then what will be the change in its net static lift (ΔL_N) ? ***0 points***

- $\Delta L_N = 0$
- $\Delta L_N < 0$
- $\Delta L_N > 0$
- No comments can be made

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\Delta L_N < 0$

8) The concept of Pressure Height is not applicable for- ***1 point***

- Zero-super-pressure balloon
- Sealed super-pressure balloon
- Hot Air Balloon
- Hot Air Airship

No, the answer is incorrect.
Score: 0

Accepted Answers:
Sealed super-pressure balloon
Hot Air Balloon
Hot Air Airship

9) The different types of Drag forces experienced by an Airship in flight are: ***1 point***

- Skin Friction Drag
- Form Drag
- Induced Drag
- Wave Drag

No, the answer is incorrect.
Score: 0

Accepted Answers:
Skin Friction Drag
Form Drag
Induced Drag

10) If there is a loss of lifting gas during Pressure Height exceedance then ***1 point***

- Ballonet becomes empty on touching the ground
- Ballonet becomes full during descent before reaching the ground
- Ballonet becomes full on touching the ground
- There will be no effect on Ballonet volume

No, the answer is incorrect.
Score: 0

Accepted Answers:
Ballonet becomes full during descent before reaching the ground