

Course outline

How does an NPTEL online course work?

Module 1 - Overview of Electric Vehicles in India

Module 2 - Vehicle Dynamics

Module 2 and 3 - Vehicle Dynamics and EV Subsystems

Module 4 - Storage for EVs

Module 4 - Storage for EVs (contd)

Module 5 - Fundamentals of battery pack design

- Lecture 34 - Fundamentals of battery pack design
- Lecture 35 - Electrical Design of Battery Pack - Part 1
- Lecture 36 - Electrical Design of Battery Pack - Part 2
- Lecture 37 - Electrical Design of Battery Pack - Part 3
- Lecture 38 - Mechanical Design of Battery Pack - Part 1
- Lecture 39 - Mechanical Design of Battery Pack - Part 2
- Lecture 40 - Mechanical Design of Battery Pack - Part 3
- Lecture 41 - Mechanical Design of Battery Pack - Part 4
- Lecture 42 - Thermal Design of Battery Pack - Part 1
- Lecture 43 - Thermal Design of Battery Pack - Part 2
- Lecture 44 - Thermal Design of Battery Pack - Part 3
- Lecture 45 - Thermal Design of Battery Pack - Part 4

- Quiz: Week 6: Assignment 1
- Quiz: **Week 6: Assignment 2**
- Quiz: Week 6: Assignment 3
- Week 6 - Lecture notes
- Week 6 - Feedback form: Electric Vehicles and Renewable Energy
- Quiz: Week 2: Assignment 2 Alternate
- Week 6: Solutions
- Week 2: Assignment 2 alternate solutions

Module 5 and 6 - Battery Pack Design, Motors and Controllers

Module 6 - EV Motors and Controllers

Module 7&8 - Battery Charging and Swapping, Analytics

Module 9: Renewable Energy - Introduction

- Quiz: Week 6: Assignment 1
- Quiz: **Week 6: Assignment 2**
- Quiz: Week 6: Assignment 3
- Week 6 - Lecture notes
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- Week 6: Solutions
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Module 5 and 6 - Battery Pack Design, Motors and

Week 6: Assignment 2

The due date for submitting this assignment has passed.

Due on 2021-09-08, 23:59 IST.

As per our records you have not submitted this assignment.

Mechanical Assignment

1) To stop swelling, retention plates are required in:

1 point

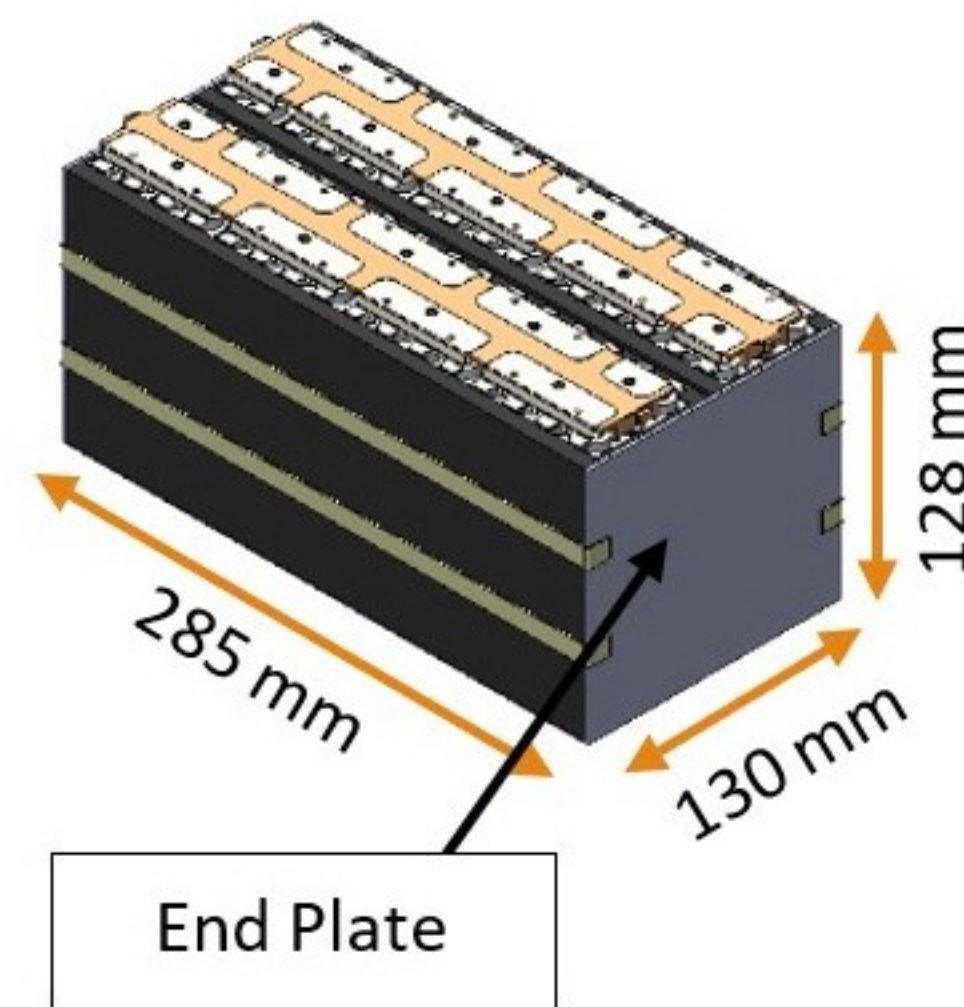
- a) Cylindrical Cell b) Prismatic cell c) Pouch cell
- Only a
 Only c
 Both b and c
 All a, b, and c

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both b and c

For the below battery pack, End plates and Side strips are required to be designed. Material selected for this purpose is Aluminum 6061 T6.

Aluminum 6061 T6	Young's Modulus - 68900 Mpa	Yield strength - 290Mpa
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Picture 1

The dimensions of Endplate are 138mmx128mmx2mm. Pressure applied (q) on it is 0.1N/mm² and boundary conditions are as defined in the picture 2. Calculate the stress generated at (x = 0, z = b) of End plate in Mpa.

Rectangular plate; three edges fixed, one edge (a) free 	10a. Uniform over entire plate	$(At x = 0, z = 0) \sigma_x)_{max} = \frac{-\beta_1 q b^2}{t^2}$ and $R = \gamma_1 q b$ $(At x = 0, z = b) \sigma_x = \frac{\beta_2 q b^2}{t^2}$ $(At x = \pm \frac{a}{2}, z = b) \sigma_x = \frac{-\beta_3 q b^2}{t^2}$ and $R = \gamma_2 q b$																																															
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2) Stress generated is _____ Mpa

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 100,130

1 point

3) 4 Battery packs of mass 10Kg, 15Kg, 20kg and 25kg, having overall stiffness of 12.5N/m, 18N/m, 15N/m and 40N/m respectively. The pack with 1 point least natural frequency is:

Natural frequency, $\omega = \sqrt{\frac{stiffness(k)}{mass(k)}}$

- Pack 1
 Pack 2

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