

# VALUE ADDED COURSE

## CHEVA04 - LEAD ACID BATTERY – RAW MATERIALS AND GRID TECHNOLOGY

*Course Duration : 30 Hours*

*Session: September to October 2022*

**Objectives:** To know about (i) Electrochemical Power Sources for Lead Acid Batteries (ii) Fundamentals and Raw materials of Lead Acid Batteries (iii) Manufacture, Grid Casting and Testing.



**Outcomes:** The students would be able to know (i) Fundamentals, Raw materials, Manufacturing, Grid casting and testing for Lead acid batteries will facilitate better understanding Lead acid batteries for further learning.

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<b>Course code:</b> <b>CHEVA04</b>	<b>LEAD ACID BATTERY – RAW MATERIALS AND GRID TECHNOLOGY</b>	<b>Hours: 30</b>
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<b>Unit -I</b>	<b>ELECTROCHEMICAL POWER SOURCES:</b> Electrochemical Technology – Battery – History of Battery - Basic Fundamentals of batteries - Requirement of Battery – Selection of battery components – Types of batteries: Primary batteries and Secondary batteries - Uses of Batteries.	
<b>Unit -II</b>	<b>FUNDAMENTALS OF LEAD ACID BATTERIES:</b> Lead Acid Battery – Theory of Lead Acid Battery –Basic components of Lead Acid Battery - Preparation and Properties of Lead Oxides – Characteristics of Lead Acid Batteries – Electrochemistry Lead Acid Cell - Applications of Lead Acid Batteries.	
<b>Unit -III</b>	<b>RAW MATERIALS FOR LEAD ACID BATTERIES:</b> Raw Materials of Lead acid batteries - Parts of Lead Acid Batteries : Construction Separators – Electrolyte – Container - Vent Plugs – Sealing compound.	
<b>Unit -IV</b>	<b>MANUFACTURING FOR LEAD ACID BATTERIES:</b> Manufacturing steps of Lead acid batteries - Process Flow Sheet Diagram - Oxide and grid production process -Pasting and Curing -Assembly Process –Formation and Filling Process, Charge-Discharge Process -Final Assembly - Inspection and Dispatch.	
<b>Unit -V</b>	<b>GRID CASTING AND TESTING FOR LEAD ACID BATTERIES:</b> Grid Casting – Preparation of Alloys - Composition of Grid Alloys – Grid Mould Coating – Thickness of Grid – Design of Mould – Temperature of Mould and Molten Alloy – Spraying of Mould– Gravity Casting – Trouble Shooting – Sampling - Quality Controls and Testing of Grid alloys –Types of Testing for Lead acid batteries.	
<b>Outcomes</b>	The students would be able to know (i) Fundamentals, Raw materials, Manufacturing, Grid casting and testing for Lead acid batteries will facilitate better understanding Lead acid batteries for further learning.	

#### Recommended Books:

1. M. Barak, Electrochemical Power Sources Primary and Secondary Batteries, Published by IEE, London and New York, 2006.
2. H. Bode John, Lead acid batteries, John Wiley and Sons Inc., New York, 1977.
3. Thomas B. Reddy, David Linden, Handbook of Batteries, Fourth Edition, 2011.
4. Detchko Pavlov, Lead-Acid Batteries: Science and Technology, Second Edition, 2017.