Date: 26-04-2019

**Summary Report on WIT & WIL**

**(Daily Report)**

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| **Name of the Faculty: Dr. T. Lakshmi Viveka** | | | **Name of Subject: Engineering Chemistry** |
| **Class/Section: AE** | | | |
|  | Grid Reference No.: | 3.3( REVISION) | | |
|  | Scenario Reference No.  (Mapping with Syllabus) |  | | |
|  | Topic covered in every class | Batteries and fuel cells | | |
|  | Brief write-up (500 words) for every class: | **Lithium battery**  A **lithium-ion battery** or **Li-ion battery** (abbreviated as **LIB**) is a type of [rechargeable battery](https://en.wikipedia.org/wiki/Rechargeable_battery) in which [lithium](https://en.wikipedia.org/wiki/Lithium) [ions](https://en.wikipedia.org/wiki/Ion) move from the negative [electrode](https://en.wikipedia.org/wiki/Electrode) to the positive electrode during discharge and back when charging. Li-ion batteries use an [intercalated](https://en.wikipedia.org/wiki/Intercalation_(chemistry)) lithium [compound](https://en.wikipedia.org/wiki/Chemical_compound) as one electrode material, compared to the [metallic](https://en.wikipedia.org/wiki/Metal) lithium used in a [non-rechargeable](https://en.wikipedia.org/wiki/Primary_battery) [lithium battery](https://en.wikipedia.org/wiki/Lithium_battery).  Lithium-ion batteries are common rechargeable batteries for [portable electronics](https://en.wikipedia.org/wiki/Portable_electronics), with a high [energy density](https://en.wikipedia.org/wiki/Energy_density), no [memory effect](https://en.wikipedia.org/wiki/Memory_effect) (other than LFP cells) and low [self-discharge](https://en.wikipedia.org/wiki/Self-discharge)  Pure lithium is highly [reactive](https://en.wikipedia.org/wiki/Reactivity_(chemistry)). It reacts vigorously with water to form [lithium hydroxide](https://en.wikipedia.org/wiki/Lithium_hydroxide) (LiOH) and [hydrogen](https://en.wikipedia.org/wiki/Hydrogen) gas. Thus, a non-aqueous electrolyte is typically used, and a sealed container rigidly excludes moisture from the battery pack.  Lithium-ion batteries are more expensive than [NiCd](https://en.wikipedia.org/wiki/NiCd) batteries but operate over a wider temperature range with higher energy densities. They require a protective circuit to limit peak voltage.  **Fuel cell**  **Direct-methanol fuel cells** or **DMFCs** are a subcategory of [proton-exchange fuel cells](https://en.wikipedia.org/wiki/Proton_exchange_membrane_fuel_cell) in which [methanol](https://en.wikipedia.org/wiki/Methanol) is used as the fuel. Their main advantage is the ease of transport of methanol, an energy-dense yet reasonably stable liquid at all environmental conditions.  Efficiency is quite low for these cells, so they are targeted especially to portable applications, where energy and power density are more important than efficiency.  A more efficient version of a direct fuel cell would play a key role in the theoretical use of methanol as a general energy transport medium, in the hypothesized [methanol economy](https://en.wikipedia.org/wiki/Methanol_economy). | | |
|  | Relevant additional illustration if any: | LIBs are also growing in popularity for military, [battery electric vehicle](https://en.wikipedia.org/wiki/Battery_electric_vehicle) and [aerospace](https://en.wikipedia.org/wiki/Aerospace) applications.  Image result for applications of lithium ion battery  Image result for applications of lithium ion battery  Image result for applications of methanol oxygen fuel cell | | |
|  | Video Links/ Web Links if any: | <https://www.youtube.com/watch?v=kqR7MihP5k4&t=2s>  https://www.youtube.com/watch?v=6oeN9VDFLig | | |
|  | Signature of Repository Administrator: |  | | |