

TSOKOS READING ACTIVITY**Section 5-3**

- Essential idea:** Electric cells allow us to store energy in a chemical form.
- International-mindedness:** Battery storage is important to society for use in areas such as portable devices, transportation options and back-up power supplies for medical facilities
- Theory of knowledge:**
 - Battery storage is seen as useful to society despite the potential environmental issues surrounding their disposal.
 - Should scientists be held morally responsible for the long-term consequences of their inventions and discoveries?
- Understandings:**
 - Cells
 - Internal resistance
 - Secondary cells
 - Terminal potential difference
 - Electromotive force (emf)
- Applications and skills:**
 - Investigating practical electric cells (both primary and secondary)
 - Describing the discharge characteristic of a simple cell (variation of terminal potential difference with time)
 - Identifying the direction of current flow required to recharge a cell
 - Determining internal resistance experimentally
 - Solving problems involving emf, internal resistance and other electrical quantities
- Guidance:** Students should recognize that the terminal potential difference of a typical practical electric cell loses its initial value quickly, has a stable and constant value for most of its lifetime, followed by a rapid decrease to zero as the cell discharges completely
- Data booklet reference:**
 - $\varepsilon = I(R + r)$
- Aims:**
 - Aim 6:** experiments could include (but are not limited to): investigation of simple electrolytic cells using various materials for the cathode, anode and electrolyte; software-based investigations of electrical cell design; comparison of the life expectancy of various batteries

- b. **Aim 8:** although cell technology can supply electricity without direct contribution from national grid systems (and the inherent carbon output issues), safe disposal of batteries and the chemicals they use can introduce land and water pollution problems
- c. **Aim 10:** improvements in cell technology has been through collaboration with chemists
9. **Utilization:** The chemistry of electric cells (see *Chemistry* sub-topics 9.2 and C.6)
10. Assignment:
- a. Read section 5-3 in your textbook.
- b. Use the Cornell Notes system to take notes on the lesson material. You have the following options:
- You can print multiple copies of the form on the next page of this document and handwrite your notes.
 - You can print multiple copies of the PDF form supplied on the webpage and handwrite your notes.
 - You can use the MS Word form supplied on the webpage and type your notes.
- c. When using this form, remember the **Five R's of Notetaking**:
- Record** – the most important or emphasized information
 - Reduce** – and synthesize information wherever possible, making it as concise as you can
 - Recite** – read your notes out loud
 - Reflect** – and consider how this information is connected to your personal experiences and what you already know
 - Review** – look over your notes more than once
- d. As a minimum, you must include notes on the following topics:
- EMF
 - battery
 - electrical energy
 - internal resistance
 - terminal potential difference
 - primary cells
 - secondary cells
 - discharging a cell
11. *This lesson contains a lot of drawings that would be useful in your notes. If you have scanning capability, you should practice scanning pictures and inserting them into documents. As you prepare for college, you should consider investing in a desktop printer-scanner-copier. Just remember that for formal reports you have to cite any images that you insert into your document. You don't have to cite scanned images for this exercise unless you use a source other than the textbook.*
12. Submit a hardcopy in class or an electronic copy directly to ManageBac using the filename, "LastnameFirstinitialPerXRA5-3".

CORNELL NOTES and the 5 R's

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Name:
Date:
Topic:

Questions/Key Points	Notes
SUMMARY:	

Name _____

Date _____

CORNELL NOTES

Topic _____

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Questions/key points

Notes

Summary