

Earth Sciences and Petroleum Department 2023-2024

List of Topics Required for Admission Exam - Postgraduate Level

Ph.D. Students

1. Geophysics

Geophysics

1. Gravity
2. Electrical methods.

Geotectonic

- Contractional Regimes
- Extensional Regime
- Strike-slip transpression and transtension regimes.
- Phanerozoic development of Arabian plate.
- Sedimentary basin related to convergent and divergent contacts of plate tectonics.

Geology of Iraq

1-General information (lithology, age, upper and lower contacts and depositional environments) about Mesozoic and Cenozoic formations in Iraqi Kurdistan Region.

2-Palaeozoic formations and their depositional environments in Iraqi Kurdistan Region.

Sedimentary Rocks

1-Different kinds of dolomitization in carbonate rocks, its environment (Model) and its Importance.

2-Classification of sedimentary rocks (carbonate & clastic) rocks.

2. Geochemistry

1. **Geochemistry of trace elements:** Introduction- Behavior of the elements-

Distribution of trace elements between co-existing phases- Factors governing the value of partition coefficients.

2. **Geochemistry of rare earth elements:** General geochemical properties and abundances of the rare earth elements.

3. **Geochemistry of isotopes:** Stable isotopes- Radioactive isotopes.

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3. Stratigraphy and Paleontology

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1-Classification of stratigraphic maps.

2-Palynology

3-Paleozoic Biocontent in Iraq.

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4. Sedimentology

Sedimentology

1-Sedimentary structures of clastic rocks and marine environments of carbonate rocks.

2-Facies analysis and their depositional environments in clastic rocks.

3-Trace fossils related to depositional environments.

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References:

- *Principles of sedimentary basin analysis* By Andrew Miall. 1984
- 2-Jassim, S. Z., & Goff, J. C., 2006. *Geology of Iraq*. Brno, Czech Republic: Dolin, Prague and Moravian Museum 341p.
- Nichola, G.J, 1999. *Sedimentology and stratigraphy*
- Fossen, H. (2016). *Structural geology*. Cambridge university press.
- *An introduction to applied and environmental geophysics*, 1998. Reynolds, J. M.).
- *Introduction to geophysical prospecting*, 1988. Durbin, M. B.
- *Geochemistry*, White 2003, 2005
- *Rare earth element geochemistry*, Henderson 1984
- *Essentials of Geochemistry*, Walther 2005

- *Tucker, M. E., 2001, Sedimentary Petrology: An Introduction to the Origin of Sedimentary Rocks. Blackwell Publishing Company, 260 p.*
- *Sedimentology and Stratigraphy , Nichols,2009*
- *Regional Geology of Iraq , Buday ,1980*
- *Paleopalynology, Alfred Traverse,2007*
- *Sedimentology and Stratigraphy , Boggs,2006*