Technical Interview Question Bank for Geoscientists

Module 4 · Mastering the Interview. Common questions Nigerian energy employers ask, grouped by theme, with guidance on what a strong answer contains. Don’t memorise scripts — understand the concept and practise saying it out loud.

General geology fundamentals

1. Walk me through the petroleum system.

Source, reservoir, seal, trap, plus migration and timing. Strong answers stress that all elements must align *in time* — generation/migration after the trap forms. Tie it to a Niger Delta example.

2. What makes a good reservoir rock?

Porosity (storage) and permeability (flow), plus net-to-gross, connectivity and seal integrity. Mention how depositional environment and diagenesis control these.

3. Explain the difference between porosity and permeability.

Porosity = void space (storage); permeability = ability to transmit fluids. You can have high porosity but low permeability (e.g. poorly connected vuggy or shaly sands).

4. What is the Niger Delta petroleum system known for?

Tertiary deltaic sequence: Akata (marine shale, source & overpressure), Agbada (paralic sands/shales, main reservoirs & seals), Benin (continental sands). Growth faults and rollover anticlines form the traps.

Geophysics & seismic

5. How does the seismic reflection method work?

A controlled source sends acoustic energy into the subsurface; reflections at acoustic-impedance contrasts are recorded by receivers; travel times and amplitudes are processed into an image of structure/stratigraphy.

6. What is acoustic impedance and why does it matter?

Product of density and velocity. Reflection strength depends on the impedance contrast across an interface — the basis for interpreting reflectors and for AVO/DHI analysis.

7. What are bright spots and how cautious should you be?

High-amplitude anomalies that can indicate hydrocarbons (esp. gas). Be cautious: lithology, tuning and coal/volcanics can mimic them. Calibrate with wells and AVO before calling pay.

8. Difference between time and depth domains?

Seismic is recorded in two-way time; converting to depth needs a velocity model. Errors in the velocity model shift depths and volumes — a common follow-up.

Petrophysics & well logs

9. Which logs identify a hydrocarbon-bearing zone?

Resistivity (high in HC), neutron-density crossover (gas), low GR for clean sand. Combine them — no single log is definitive.

10. How do you calculate water saturation?

Archie’s equation for clean formations (using Rw, porosity, resistivity and the a, m, n parameters); explain shaly-sand corrections (Simandoux/Waxman-Smits) and the limits of Archie.

Software, data & practical skills

11. What software have you used and for what?

Be specific: Petrel (interpretation/modelling), Techlog/IP (petrophysics), ArcGIS/QGIS (mapping), Python/Excel (data). Give one concrete task you completed in each.

12. How would you QC a dataset before interpreting it?

Check completeness, units, datums/coordinate systems, outliers and well-ties. Shows maturity — employers value people who don't trust data blindly.

Behavioural & motivation (use the STAR method)

13. Tell me about a technical problem you solved.

Use STAR: Situation, Task, Action, Result. Say **"I"**, not "we", and end with a quantified result.

14. Why do you want to work in oil & gas / for this company?

Show you researched *this* company (their assets, recent news, values). Connect it to your skills and goals.

15. Where do you see yourself in five years?

Show ambition with realism and commitment to growing with the company; mention professional development (SPE/NAPE, chartership).

16. Describe a time you worked in a team / handled conflict.

STAR again. Focus on your specific contribution and what you learned.

Smart questions to ask THEM

Always have 3–5 ready. For example:

- What does success look like in this role in the first 12 months?
- What software and workflows does the subsurface team use day to day?
- How are graduates mentored and developed here?
- What are the team's current focus areas or biggest technical challenges?

Tip For every technical answer, end by linking it to business value (risk reduced, volume added, time saved). Geoscience that connects to economics is what gets you hired.