



Series A

This is a first-principles, conceptual paper. Almost every question is a one-line recall or definition, and only a handful need a quick calculation (Q7 mole conversion, Q8 API gravity, Q10 Cv of a diatomic gas). Difficulty is easy to moderate

Approximate topic distribution (out of 100)

Topic	Approx. Qs	Question numbers
Fluid mechanics, pumps, flow, agitation	30-32	20-32, 35, 36, 74-83, 85-87, 98
Water and wastewater / environmental engineering	26-28	33, 34, 37-53, 57, 91-93, 96, 97
Petroleum and drilling, tanks, reservoirs	17-18	8, 53-56, 58-67, 89, 100
Hydropower	7	68-73
Materials, metallurgy, corrosion	12-13	13-19, 84, 90
Cement technology	8	1-6, 94, 95
General chemistry, thermodynamics, units	6	7, 9-12, 88

Key trends

1. **Fluid mechanics dominates.** It is the single largest block. Repeated themes are pump selection and working (gear, screw, peristaltic, centrifugal, reciprocating), cavitation and NPSH, dimensionless numbers (Re, Mach, power number), non-Newtonian fluids, and filtration.
2. **Environmental engineering is the second pillar.** It includes BOD/COD, coagulation and flocculation, sewage treatment stages, eutrophication, and the oxygen sag curve. Assam-specific contamination (arsenic, fluoride) appears in Q91 and Q97
3. **Petroleum-sector orientation.** it covers drilling rigs (Kelly, Christmas tree, jack-up, semi-submersible), cap rocks, storage tanks, dewaxing, and dissolved air flotation. Nearly one in five questions is oil and gas specific.



4. **Traps in the wording.** About 10-12 questions use “NOT” or negatives (Q5, 15, 32, 40, 44, 57, 62), so misreading is a real risk.
5. **Very few numerical items.** Only about 3-4 questions need actual computation, so speed on theory recall matters more than calculation skill.
6. **Cross-topic overlap.** Pump questions appear in several places (Q27-29, 83, 85, 87), and agitation in Q35, 74, 75, and 98. Core mechanical operations (filtration, sedimentation, agitation) get repeated coverage.
7. **Some questions are outside core chemical engineering.** Cement, hydropower, and metallurgy account for about 27 questions.