

INTRODUCTION

The Canadian Engineering Qualifications Board of Engineers Canada issues the Examination Syllabus that includes a continually increasing number of engineering disciplines.

Each discipline examination syllabus is divided into two examination categories: compulsory and elective. A full set of Petroleum Engineering examinations consists of nine, three-hour examination papers. Candidates will be assigned examinations based on an assessment of their academic background. Examinations from discipline syllabi other than those specific to the candidates' discipline may be assigned at the discretion of the constituent association.

Before writing the discipline examinations, candidates must have passed, or have been exempted from, the Basic Studies Examinations.

Information on examination scheduling, textbooks, materials provided or required, and whether the examinations are open or closed book, will be supplied by the constituent association.

PETROLEUM ENGINEERING EXAMINATIONS

GROUP A

COMPULSORY EXAMINATIONS (SEVEN REQUIRED)

17-Pet-A1 Principles of Stratigraphy and Sedimentation

Sedimentary processes, environments and facies; properties and classification of sedimentary rocks; stratigraphic code, nomenclature and the stratigraphic column; stratigraphic relationship and interpretations.

17-Pet-A2 Petroleum Reservoir Fluids

Phase behaviour of hydrocarbon fluid ideal and non-ideal gases, and liquids; qualitative and quantitative phase behaviour- PVT data and equations of state; properties of gases, oil, and water; reservoir fluid studies; application of fluid properties for compositional analyses; phase separation and reservoir behaviour; gas-liquid equilibria.

17-Pet-A3 Fundamental Reservoir Engineering (Physical Properties and Flow of Fluid through Porous Media)

Porosity and pore structure, fluid saturations, absolute permeability, interfacial tension, wettability, capillary pressure. Multiphase flow and relative permeability. Steady and unsteady Darcy flow of single fluid. Immiscible and miscible flows. An introduction to oil and gas material balance equations, drive indices. An introduction to performance prediction techniques and decline curve analysis.

17-Pet-A4 Oil and Gas Well Drilling and Completion

Drilling rig types, components and selection. Rotary drilling, drilling fluids, drilling hydraulics, penetration rates, drilling operations, core and core analyses, drillstem testing, casing design and seat selections;

formation damage; cementing procedures, and well completion. Special topics including: directional drilling; blowout control; logging and coring; hole stability; planning and cost control; underbalanced drilling; coiled tubing drilling; offshore drilling operations, and environmental aspects.

17-Pet-A5 Petroleum Production Operations

Principles of oil and gas production mechanic. . Reservoir Inflow performance . Wellbore hydraulics and multiphase flow. Decline curve analysis. Nodal analysis for production optimization. Acidizing and hydraulic fracturing. Artificial lift; Sucker-rod pumping; electrical submersible pumps; progressing cavity pumps; and gas lift. Oil and gas separation, wellbore damage, fluid movements patterns. Workover operations and stimulation methods, oil well cementing and through tubing logging. Surface facilities: storage, separators, emulsions, flow measurement.

17-Pet-A6 Reservoir Mechanics

Advanced reservoir engineering principles including estimation of reserves; material and volumetric balance; combined driving mechanisms including unsteady state water influx; mechanics in hydraulically fractured wells. Performance prediction techniques. Linear material balance and statistical analysis of unknowns from production history.

17-Pet-A7 Secondary and Enhanced Oil Recovery

The fluid displacement process. Trapping and mobilization of residual oil; displacement theory; linear waterflood calculations; viscous fingering; flood patterns and sweep efficiency. Buckley/Leverett theory. Analytical waterflood prediction models; black-oil reservoir simulation models; design engineering aspects of waterflooding. Miscible displacement methods and thermal recovery techniques.

GROUP B**ELECTIVE EXAMINATIONS (TWO REQUIRED)****17-Pet-B1 Well Logging and Formation Evaluation**

Theory and engineering and applications of measurements of physical properties of the formation near the wellbore; types of well logging devices; conventional logging interpretation and its applications in oil, and gas reservoirs.

17-Pet-B2 Natural Gas Engineering

Estimation of reserves; flow measurements; flow through conduits; steady, transient, Darcy and non-Darcy flow through porous media; well testing, buildup and drawdown tests; deliverability; well interference. Decline curve analysis; and development of shale gas.

17-Pet-B3 Oil and Gas Evaluation and Economics

Oil and gas reserves, conservation, proration, value of money, evaluation nomenclature, payout time, profit ratio, rate of return, capital cost allowance, taxation, oil and gas unitization theory.

17-Pet-B4 Petroleum Geology

Physical and chemical characteristics of formation waters, natural gas, and crude oil. Origin and modes of occurrence of each of these in the earth. Geography of petroleum and natural gas in Canada, North America, and the world.

17-Pet-B5 Well Testing

Basics of Well Test Interpretation: diffusivity equation, skin, wellbore storage, radius of investigation; different flow regimes: transient, pseudo-steady state, steady state; interpretation of drawdown and buildup data for estimating formation permeability, skin, reservoir pore volume, average reservoir pressure; superposition; effect of fault and double porosity systems; derivative analysis; gas well testing.