

OPTION: PETROLEUM SYSTEM AND EXPLOITATION.

PAPER: CASE STUDY

Credit value: 10

Objective(s) of the paper: The objective of this paper is to test the candidate's critical and analytical thinking on the petroleum sector.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different section of paper	Duration per section	Marks allocated	Percent age
Case study PSE 14	Petroleum System and exploitation	Section A: Petroleum Exploration This exercise will focus: either on Geophysical exploration techniques: ➤ Magnetic Survey (Description of the Method and qualitative interpretation) ➤ Gravity Survey (Description of the Method and qualitative interpretation) ➤ Seismic survey (Description of the Method and qualitative interpretation) either on Geological exploration Methods: ➤ Stratigraphic Traps ➤ Structural Traps ➤ Hydrodynamic traps	1 Hr 25 min	25	25%
		Section B: Petroleum Production Technology ➤ Production Systems ➤ Well completion and perforations ➤ Work over and well services ➤ Oil field surface production equipment ➤ Artificial lift Methods Oil Production safety.	1Hr 25min	25	25%

		Section C: Reservoir Engineering. ➤ Gas properties ➤ Oil properties ➤ Water properties ➤ Primary recovery methods ➤ Secondary recovery methods ➤ Reserves estimation	1 Hr 25 min	25	25%
		Section D. Fundamental of well logging and completion ➤ Introduction to well logging and well testing ➤ Well logging techniques ➤ Oil well testing ➤ Gas well testing	1Hr 25 min	25	25%
			5HRS	100	100

PAPER: DRILLING ENGINEERING.

Field: Petroleum and Mining Engineering.

Specialty: Petroleum System and Exploitation.

Option: Petroleum System and Exploitation.

Credit value: 06

Objective(s) of the paper: The objective of this paper is to test the candidate's critical and analytical thinking on the drilling sector, the different processes and the various equipments used.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different section of paper	Duration per section	Marks allocated	Percent age
Drilling Engineering PSE15	Petroleum System and exploitation	Section A ➤ Basic rig components ➤ Basic rotary drilling operations ➤ Hoisting system ➤ Rotating system ➤ Circulating system	30 min	30	30%
		Section B ➤ Functions of drilling fluids ➤ Casing and cementing.	1 Hr 15mins	50	50%
		Section C ➤ Mud calculations ➤ Calculations on WOB ➤ Hydraulics and pneumatic calculation	1 Hr 15mins	20	20%
			3HRS	100	100

PAPER: INTRODUCTION TO OIL AND GAS.

Field: Petroleum and Mining Engineering.

Specialty: Petroleum System and Exploitation.

Option: Petroleum System and Exploitation.

Credit value: 04

Objective(s) of the paper: The objective of this paper is to test the candidate's critical and analytical thinking on the background knowledge of petroleum and its constituents.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different section of paper	Duration per section	Marks allocated	Percentage
Introduction to Oil and Gas PSE17	Petroleum System and exploitation	Section A: Introduction to pet. Engineering. ➤ Units of measurement in the Petroleum Sector ➤ Origin and Composition of Petroleum	1 Hr	30	30%
		Section B: Introduction to Pet. Geology. ➤ Geology fundamental ➤ Petroleum systems	1 Hr	35	35%
		Section C: Petroleum Exploration Techniques. ➤ Direct Indications ➤ Geological methods ➤ Geophysical methods apply for petroleum exploration ➤ Seismic method for petroleum industry.	1 Hr	35	35%
			3HRS	100	100

PAPER: ENHANCED OIL RECOVERY

Field: Petroleum and Mining Engineering.

Specialty: Petroleum System and Exploitation.

Option: Petroleum System and Exploitation.

Credit value: 04

Objective(s) of the paper: The objective of this paper is to test the candidate's critical and analytical thinking on the various recovery methods. Candidates should also be able to identify and critically examine and proposed suitable solutions to better the recovery.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different section of paper	Duration per section	Marks allocated	Percentage
Enhanced Oil Recovery PSE16	Petroleum System and exploitation	Section A ➤ Primary Drive mechanism.	1 Hr	30	30%
		Section B ➤ Secondary recovery Methods	1 Hr	30	30%
		Section C ➤ Tertiary drive mechanism ➤ Well/ Reservoir stimulation and production optimization	1 Hr	40	40%
			3HRS	100	100

PAPER: LABORATORY PRACTICAL ANALYSIS

Field: Petroleum and Mining Engineering.

Specialty: Petroleum System and Exploitation.

Option: Petroleum System and Exploitation.

Credit value: 06

Objective(s) of the paper: The student will be evaluated on the basis of Process analysis of pilot plant, Energy concept fluid parameters and process trouble shooting.

Nature of the Exam: Practicals.

Format of PAPER

Exam Paper	Option	Different section of paper	Duration per section	Marks allocated	Percentage
Laboratory Practical Analysis. PSE21	Petroleum System and exploitation	Section A: Experimental laboratory techniques ➤ pH determination. ➤ Standard preparations. ➤ Sulphur tests ➤ Viscosity. ➤ Qualitative and Quantitative analysis. Etc.	3 Hrs	65	65%
		Section B: Laboratory calculations. ➤ Calculation of Parts Per Million. ➤ Calculation of Percent V/V% ➤ Calculation of Percent W/W% etc.	2 Hr	35	35%

PAPER: ROCK MECHANICS.

Field: Petroleum and Mining Engineering.

Specialty: Petroleum System and Exploitation.

Option: Petroleum System and Exploitation.

Credit value: 06

Objective(s) of the paper: The objective of this paper is to test the candidate's critical and analytical thinking on the various recovery methods. Candidates should also be able to identify and critically examine and proposed suitable solutions to better the recovery.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different section of paper	Duration per section	Marks allocated	Percentage
Rock MechanicsPS E19	Petroleum System and exploitation	Section A: General knowledge	30 min	40	40%
		Section B: Petrophysics	1Hr 30min	60	60%
		Section C: Petrophysics			
		➤ Porosity determination ➤ Permeability ➤ Fluid saturation ➤ Capillary pressure ➤ Surface tension ➤ Wettability Darcy law and application			