

Contents

Preface	I
Contents.....	III
Figures.....	IV
UNIT 1: Petroleum Industry	9
UNIT 2: Origin of Petroleum and Traps	23
UNIT 3: Reservoir Fluids.....	35
UNIT 4: Exploring for the Petroleum	47
UNIT 5: Drilling for Oil	61
UNIT 6: Reservoir Performance	75
UNIT 7: Production Technology	89
UNIT 8: Surface Production Facilities	103
UNIT 9: Reservoir Simulation.....	117
UNIT 10: Transporting Oil.....	129
UNIT 11: Refining Oil.....	145
UNIT 12: Careers in the Petroleum Industry	157
Appendix.....	173
References	263

Figures

Fig.1-1: Preindustrial power on the left, a millstone; on the right, a woman grinding maize by hand.	13
Fig.1-2: An electric generating plant. The barge is delivering oil that provides power for the plant.	16
Fig.2-1: Elementary traps in sectional view.	28
Fig. 2-2. Contours of structural environments.	28
Fig.3-1: Typical P-T diagram for multicomponent system	39
Fig.4-1: A geologist examining layers of rock.....	51
Fig.4-2: Examining cores of rock in a laboratory.	51
Fig 4-3: Studying aerial survey maps.	52
Fig.4-4: The use of a seismograph in underground exploration for petroleum.....	54
Fig.5-1: Typical bits used in drilling for oil.	64
Fig.5-2: Cable- tool Drilling	64
Fig.5-3: Rotary Drilling	65
Fig.5-4: Directional Drilling	67
Fig.6-1: Typical pressure-production histories of the three major drives.....	81
Fig.6-2: Diagram showing the supplementing of natural reservoir energy by water injection into the water zone and gas injection into the gas cap.	82
Fig 6-3: World energy demand.....	86
Fig.7-1: Simple production system.	91

Fig.7-2: Simple single-well production system.....	94
Fig.10-1: A pig, used to clean a pipeline.....	134
Fig.10-2: Typical distribution of petroleum products in a product pipeline.	135
Fig.10-3: A tanker.	136
Fig.10-4: Looking forward toward the bow of a modem supertanker.....	137
Fig.10-5: An offshore anchorage for a supertanker.	138
Fig.10-6: An oil barge used for transporting petroleum products on inland waterways.	139
Fig.11-1: An oil refinery.	147
Fig.12-1: Men working with a rotary drill.....	160
Fig.12-2: A derrickman.	163
Fig.12-3: A welder.	163
Fig.12-4: Training a crew to navigate a supertanker.....	166