



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2011/2012

**FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
(ENGINEERING)**

SET 540: PETROLEUM ENGINEERING.

DATE: Monday 28th November 2011

TME: 8.00a.m – 10.00a.m

INSTRUCTIONS:

Attempt ALL Questions.

Question 1. (18 Marks).

a) Distinguish between

i. Geological Formations and Geological Time.

ii. Upstream and Downstream oil sectors

iii. Drill string and a Kelly.

(6Marks).

b) i) Mention the five major ways in which crude oil can be classified.

(5Marks).

ii) Which are the main objectionable impurities of crude oil and how are they removed before it

is put into use.

(7Marks).

Question 2. (Total 20 Marks)

a) i) Define Directional drilling?

(1Marks).

ii) In which areas is it advantageous to use Directional Drilling technology

(2Marks).

b) i) What is Rotary drilling?

(1Marks).

ii) What are the major functions of a fluid to be used for Rotary drilling. (10Marks).

iii). Mention the properties of mud which make it eligible to be used in rotary drilling as a drilling fluid. (6Marks).

Question 3 .(Total 16 Marks)

a) Use the provided diagram to answer the following question.(Diagram A)

i) What is the general process represented in the diagram. (4Marks).

ii)Name ,and explain the functions of each of the following equipments labeled as 3,5 and 8, (6Marks).

b) i) The equipment labeled 10 is a bit. What is a bit? (2Marks).

ii) What factors will lead to poor performance of the bit penetration (4Marks).

Question 4. (16 Marks)

a) For the provided KPRL process diagram, give the general process name (2Marks).

b) What does the process involve? Explain. (2Marks).

c) Name the equipments used and explain the operating conditions of each. (6Marks).

d) If you get employed as an energy engineer in an oil refinery plant, briefly explain how you will manage the expected environmental aspects and impacts. (6Marks).

THE END