



KENYATTA UNIVERSITY
EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
PETROLEUM ENGINEERING
EPL 511: ARTIFICIAL LIFT METHODS

1ST SEMESTER 2023/2024

TIME: 2 HOURS

INSTRUCTIONS:

The examination consists of TWO sections (A and B). Answer Section A (compulsory) and ANY TWO questions from Section B.

Section A (Compulsory)

1. (a) Name the six primary artificial lift methods. (5 marks)
- (b) Give five (5) justifiable reasons for the application artificial lift methods. (5 marks)
- (c) With the aid of diagrams illustrate the operation of the categories of artificial lift methods. (5 marks)
- (d) Name the three (3) common failure mode of sucker rod pumping system and list the factors under them. (5 marks)
- (e) Name five (5) of the common artificial lift method selection criteria for the deployment of artificial lift. (5 marks)
- (f) Name the three (3) categories of considerations that must be looked when using extensive table of Clegg Bucaram and Hein (1993) for artificial lift comparison. (5 marks)

Section B – Answer nay TWO Questions (Each Question 20 marks)

2. (a) Name and discuss the three (3) major components of a gas lift. (10marks)
- (b) Mention and discuss the four (4) categories of wells in which a gas lift can be considered. (10 marks)

3. (a) Name and discuss the factors that affect the performance of an ESP. (10 marks)

(b) List the six steps required for the design of ESP (10 marks)

4. (a) Mention and discuss the two primary kinds of Hydraulic pumps. (10 marks)

(b) Describe the working of Hydraulic lift Pumping System. (10 marks)

5. Make a labeled sketch drawing of a Sucker rod Pumping system and describe the major components.

(20 marks)