



KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

IN PETROLEUM ENGINEERING

EPL 401: WELL CONSTRUCTION AND COMPLETION DESIGN

3RD TRIMESTER 2022/2023

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 (30 marks)

Question 1

- (a) What is well completion and highlight four reasons why it is important? (6 marks)
- (b) Highlight on the three basic completion methods and mention any five completion downhole equipment you know. (6 marks)
- (c) (i) What are cementing Chemicals? (2 marks)
(ii) Mention any four cementing chemicals you know and their functions. (4 marks)
- (d) What is fluid compatibility and why is fluid incompatible a concern during completion operations. Mention two workover and completion fluids you know. (6 marks)
- (e) What are spacers and why are they used during cementing operations. (6 marks)

Section B- Answer any TWO questions (Each question 20 marks)

Question 2

- (a) (i) Write briefly on cementing operation and types (5 marks)
(ii) Name the 5 keys to a successful cement Job? (3 marks)
- (b) Sketch a diagram to show a configuration of primary cementing operation from surface to production casing. (6 marks)
- (c) Write briefly on burst and collapse pressure and indicate each on a sketch (6 marks)

Question 3

- (a) What is workover operation? Mention five types of operations associated with it (6 marks)
- (b) Highlight any five standard lab test that are conducted to determine the properties of cement slurry and the equipment that are used for such tests. (8 marks)
- (c) Sketch a diagram showing triple completion method. (6 marks)

Question 4

- (a)(i) What is stimulation operation? (4 marks)
- (ii) Mention the two main types and highlight the basic differences (4 marks)
- (b) Mention five things that could cause a well to be sick? (5 marks)
- (c)(i) What is sand control operation (3 marks)
- (ii) Mention four reasons why sand production is undesirable. (4 marks)

Question 5

- (a) Mention three types of casing loads and give examples of each (8 marks)
- (b) In completion design highlight five data sources necessary for completion design (5 marks)
- (c) What is Christmas tree and main functions (6 marks)