


KISII UNIVERSITY
UNIVERSITY EXAMINATIONS
SECOND YEAR EXAMINATION FOR THE AWARD OF
THE DEGREE OF BACHELOR OF PETROLEUM CHEMISTRY
SECOND SEMESTER 2022/2023
(JUNE - SEPTEMBER, 2022)

BSPC 222: NATURAL GAS PROCESSING

STREAM: Y2 S2

TIME: 2 HOURS

DAY: WEDNESDAY, 3.00 PM – 5.00 PM

DATE: 07/09/2022

INSTRUCTIONS:

- 1. Do not write anything on this question paper.**
- 2. Answer ALL questions in section A (compulsory) and any other TWO Questions in section B.**

SECTION A

QUESTION ONE

- a. Explain the following terms as used in natural gas processing:
(3marks)
 - i. hydrocarbon dew point
 - ii. cryogenic process
 - iii. natural gas
- b. In natural gas processing, one of the processes is separating and treating of well fluids. Highlight three general types of separators in respect to this. (3marks)
- c. Draw a well labeled diagram of the internal structure of a separator. (5marks)
- d. Field treatment of natural gas consists of four main processes highlight these processes. (4marks)
- e. Highlight some of the important parameters to consider when designing a gas processing system (5marks)

- f. Other than sulfinol process name and describe other methods used in acid gas removal. (5marks)
- g. What are the disadvantages of having mercury in natural gas? (4marks)
- h. Describe pressure swing and adsorption as a method of dehydration process (6marks)
- i. Which methods that can be used to reject nitrogen other than cryogenic process in natural gas processing? (5marks)

SECTION B

QUESTION TWO

- a. Water removal is one of them in the processes during gas processing. Describe what happens in the system during the process of water removal. (5marks)
- b. Another process is acid gas removal.
 - i. What do you understand by the term acid gas removal? (2marks)
 - ii. With the aid of a well labeled diagram describe amine treatment as used in acid gas removal (8marks)

QUESTIONTHREE

- a. What is glycol dehydration (1mark)
- b. Name any four usable glycols (4marks)
- c. With the aid of a good flow chart, describe glycol dehydration. (10marks)

QUESTION FOUR

- a. Fractionation is the last process during natural gas processing. What do you understand by this process? (2marks)
- b. Describe the process of fractionation (5marks)
- c. Describe some of the by-products from natural gas processing and some of their uses. (8marks)