

**NATIONAL OPEN UNVERSITY OF NIGERIA**

PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA

**FACULTY OF SCIENCES**

**DEPARTMENT OF PURE & APPLIED SCIENCES**

**JULY 2018 EXAMINATIONS**

**CHM 311-Petroleum Chemistry (2 Units)**

**INSTRUCTION: Answer Question 1 and any other 3 Questions**

**Time allowed 2 hours**

**QUESTION 1**

(a(i). The odorless nature of natural gas is the reason why the gas leaking cannot be dictatedby the producer and end users. Explain how this challenge can be overcome.

**(4marks)**

(ii) Mention four none-hydrocarbon compounds found in crude oil. **(4marks )**

b). Explain the following terms: (i) Salt content, (ii) Sulphur content (iii) Ash content.

**(8 marks marks )**

c). List the major classes of crude oil. **(3 marks )**

(ii) Mention two plausible methods for developing the deepwater non-associated gas fields. **(2 marks)**

(iii) Write the chemical equation for main stream reforming reactions. **(4 marks)**

**QUESTION 2**

a). Explain the term cracking as used in Petroleum chemistry. **(4 marks)**

b). Explain in detail the origin and formation of biogas. **(4 marks)**

c). Explain in detail how natural gas can be formed.**(7 marks)**

**QUESTION 3**

a).Explain the terms diagenesis and mutagenesis. **(9½ marks)**

b). Explain in detail the composition of crude oil. **(3 ½ marks)**

c). Write the equation for the main stream reforming reaction. **(2 marks)**

**QUESTION 4**

a). Define the term Catagenesis. **(6 marks)**

b). Explain the term pour point. **(2 ½ marks)**

c). Why is it necessary to treat natural gas before use?**(6½ marks)**

**QUESTION 5**

a). What is catalytic methanation?**(9 marks)**

b). Discuss the uses of ammonia.**(4 marks)**

c). Define the following terms: oil field and Oil well. **(2 marks)**