



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF PURE & APPLIED SCIENCES
2021_1 EXAMINATION[™]

COURSE CODE: CHM311 **COURSE TITLE: Petroleum Chemistry**

CREDIT: 2 Units **TIME ALLOWED: 2 Hours**

INSTRUCTION: Answer Question ONE (1) and any other Three (3) Questions

QUESTION ONE

- a) What is Petroleum? **(2 marks)**
- b) With the aid of a diagram only describe the carbon cycle? **(5 marks)**
- c) Name three hydrocarbon classes of crude oil with 1 example each? **(6 marks)**
- d) Briefly Discuss the following terms:
 - i) Tight Natural Gas **(4 marks)**
 - ii) Methane Hydrates **(4 marks)**
 - iii) Geopressured Zones **(4 marks)**

QUESTION TWO

- a) List four chloromethanes produced by successive substitution of methane? **(4 marks)**
- b) What is the effect of increasing temperature in Haber process? **(3 marks)**
- c) List two uses of ammonia and methanol each? **(4 marks)**
- d) What are the potentials of Nigeria Natural Gas? **(4 marks)**

QUESTION THREE

- a) Itemize two methods of developing deep water non-associated gas fields **(3 marks)**
- b) Why is the global market for natural gas much smaller than for oil? **(3 marks)**
- c) Define the following terms:
 - i) Oil tanker **(3 marks)**
 - ii) Pipeline transport **(3 marks)**

iii) Reserve/production ratio **(3 marks)**

QUESTION FOUR

- a) Discuss any two risks associated with Nigeria's oil and gas sector investment **(6 marks)**
- b) why must moisture be removed from natural gas? **(3 marks)**
- c) What are the various ways of removing acid gas from natural gas? **(3 marks)**
- d) Why are Hydrogen sulphide (H_2S) and Carbon dioxide (CO_2) undesirable? **(3 marks)**

QUESTION FIVE

- a) List five desirable properties of an FCC catalyst? **(5 marks)**
- b) What are the two different configurations of FCC unit? **(2 marks)**
- c) The bottom product oil is called slurry oil, explain? **(3 marks)**
- d) Differential between simple distillation and fractional distillation **(5 marks)**