



RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES
B.Sc. (General) Degree in Applied Sciences
Third Year Semester II - Examination – October / November - 2017

CHE 3213 – INDUSTRIAL CHEMISTRY

Answer all parts A and B

Time: 02 hours

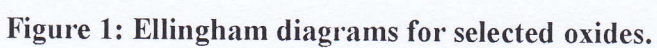
“Part A”

Answer **all** questions (1), (2) and (3)

1. Answer **all** parts (a), (b) and (c)
 - a) What are the general steps of metal extraction technique?
 - b) What are the basic metal extraction methods? Define them.
 - c) Write a brief account on refining of Metals. (30 marks)

2. You are provided the Bauxite ore sample which is contaminated with unknown impurities. Clearly explain all steps for the extraction of pure Al from this contaminated Bauxite sample. (30 marks)

3. Answer **ALL** parts
 - a) Metal oxides are unstable at high temperature. Explain using Ellingham diagram
 - b) Write the reaction which occurs in the zone of combustion of blast furnace during the extraction of iron
 - c) Write the equation for the chemical reaction taking place at 600 °C in the extraction of iron by blast furnace.
 - d) What is the function of lime stone and coke in the smelting of haematite?
 - e) With the help of Ellingham diagrams explain why carbon monoxide acts as reducing agent in the production of cast iron from haematite



(40 marks)

"Part B"

Answer **all** questions (1), (2) and (3)

1. Answer all parts (a), (b), (c) and (d)

- What are three phases in the transformation of organic matter into hydrocarbons?
- Define the above three phases.
- Briefly explain the oil window shown in bellow using above three phases.

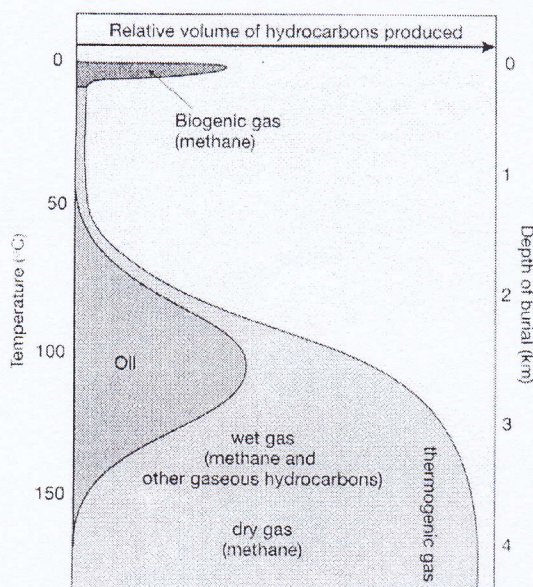


Figure 2: Oil window

(40 marks)

2. Answer **all** parts (a), (b), (c) and (d)

- Briefly explain how the fractions are separated at atmospheric distillation process of petroleum.
- Write the resulting fractions of crude oil with separating temperature at atmospheric distillation and their uses.
- What are the physical processes of petroleum reforming?
- Briefly describe one physical process from above (c).

(30 marks)

3. Answer **all** parts (a), (b) and (c)

- What is cracking of petroleum?
- Define the terms "**Thermal cracking**" and "**Catalytic cracking**".
- Write an account on thermal cracking.

(30 marks)

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