

Bago University
Department of Chemistry
First Semester Examination, March 2019

Fourth Year BSc
(Chemistry Specialization)
Answer any six Questions

Chem-4106
Petroleum Chemistry
Time Allowed: (3) hours

1. (a) Fill in the blanks with the correct word(s), unit(s), and etc., as necessary.
 - (i) Petrochemicals are _____ derived from petroleum and natural gas.
 - (ii) The term cracking applies to the _____ of petroleum constituents.
 - (iii) The development of the _____ industry has attracted the attention of the world.
 - (iv) Crude oil contains small amounts of water, mineral salts and _____.
 - (v) Gel permeation chromatography, also called _____ chromatography.
 - (vi) An octane number is a measure of the _____ tendency of gasoline fuels in spark ignition engines
- (b) Select the correct statement(s), word(s), unit(s) and etc., given in the followings.
 - (i) The sulphur content of crude oils varies from less than 0.5 wt% to more than (8, 9, 10) wt%.
 - (ii) Smoke point is the (maximum, medium, minimum) height in mm, of a smokeless flame of fuel.
 - (iii) For boiling points distribution of crude oil below (340 °C, 535 °C, 995 °C), the distillation is performed at atmospheric pressure.
 - (iv) The crude oil has a (narrow, broad, sharp) boiling range.
 - (v) Petroleum ether use in (solvent in industry, solvent in dry cleaning, fuel for the steel industry).
 - (vi) A variant of the process is known as (catalytic cracking, thermal cracking, hydrocracking).
2. (a) Define (i) Flash point (ii) Pour point and (iii) Aniline point.
(b) How could the presence of sulphur compounds affect the petroleum products?
3. (a) Provide the names of the chromatographic methods performed for the determination of the composition of crude oil.
(b) How do you understand for cation-exchange chromatography?
4. (a) What are the spectroscopic methods for identification of constituents of petroleum?
(b) How do you understand for high performance liquid chromatography?
5. (a) Make a list of the petrochemical products obtained from the following feedstocks:
(i) methane (ii) benzene
(b) What are petrochemicals? Discuss primary petrochemicals.

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6. (a) Classify the grades of gasoline by octane ratings.
(b) Describe the refining processes.
(c) Give the information about the isomerization process for petroleum refining.
7. (a) List boiling range, number of carbon atoms and uses of the following refinery products.
(i) Natural gas (ii) petroleum ether (iii) light naphtha
(b) What is meant by cracking? Classify the cracking process. And what are the cracking products?
