UNIVERSITY COLLEGE TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: BCE 3213
COURSE	: PETROCHEMICAL AND PETROLEUM TECHNOLOGY
SEMESTER/SESSION	: 2 - 2024/2025
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 4 questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise up your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 5 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1 **25 MARKS**

a) Explain the following terms:

i. Petroleum (2 marks)

ii. Sour crude oil (2 marks)

iii. Paraffin (2 marks)

b) Distinguish the differences between aromatics and cycloalkanes. (2 marks)

c) Classify the composition of hydrocarbon. (3 marks)

d) Ethane, C_2H_{12} is a main feedstock in formation of polyethylene plastic product.

(i) Name the process of the formation (2 marks)

(ii) Show the mechanism of the process (4 marks)

e) Besides being used as a cooking gas, Butane C4 also been used feedstock for industrial process. (8 marks)
Identify four (**4**) products derived from butane and its properties.

QUESTION 2 **25 MARKS**

a) Select the composition and formation of lipid and fatty acid. (4 marks)

b) According to the WHO research, the result shows that the used of olive oil is better than palm oil. Explain the result. (4 marks)

c) Unsaturated fat can be found in *cis* and *trans* position. Determine which one is better and explain your answer. (4 marks)

d) The unsaturated fat can form a saturated fat via **X** process.

i. Identify the **X** process (2 marks)

ii. Illustrate the process in **(i)** (4 marks)

e) The saturated and unsaturated fat have different physical and chemical properties.

i. Draw the molecular structure of these fats. (4 marks)

ii. Relate the structure with the properties. (3 marks)

QUESTION 3 **25 MARKS**

a) Describe the concept and mechanism involves in distillation of crude oil process. (5 marks)

b) In distillation, gasoline gives better value than asphalt. Explain the situation. (3 marks)

c) Discuss the processes needed to decrease the viscosity of the product petroleum. (3 marks)

d) Sketch the mechanisms of Catalytic Cracking and Catalytic Reforming processes. (4 marks)

e) Differentiate between the coil vis breaking and soaker vis breaking process. (6 marks)

f) Summarize the process for vis breaking and coking. (4 marks)

QUESTION 4 **25 MARKS**

a) List the objectives of palm oil refinery (4 marks)

b) Categorize in details the processes involved in chemical refining method. (8 marks)

c) Explain the significance of processing parameters for bleaching palm oil. (6 marks)

d) Both oleo-chemical and petrochemical industries are the main contributors to Malaysia's economy.

i. Discuss the advantages and disadvantages of each industry. (4 marks)

ii. Choose which industry you interested in **(i)**. Justify your answer. (3 marks)

----------**End of question**----------