

INSTRUCTION:

This section consists of **FOUR (4)** structured questions. Answer **ALL** questions.

ARAHAN :

*Bahagian ini mengandungi **EMPAT (4)** soalan berstruktur. Jawab **SEMUA** soalan.*

QUESTION 1**SOALAN 1**

CLO1
C1

- (a) Hydrocarbon is usually classified according to the bond formed structure as shown in Figure 1(a). Fill in the box below as labelled from 1 to 7.

Hidrokarbon biasanya dikelaskan mengikut struktur ikatan yang terbentuk sebagaimana rajah 1(a). Isi kotak berikut yang berlabel 1 hingga 7.

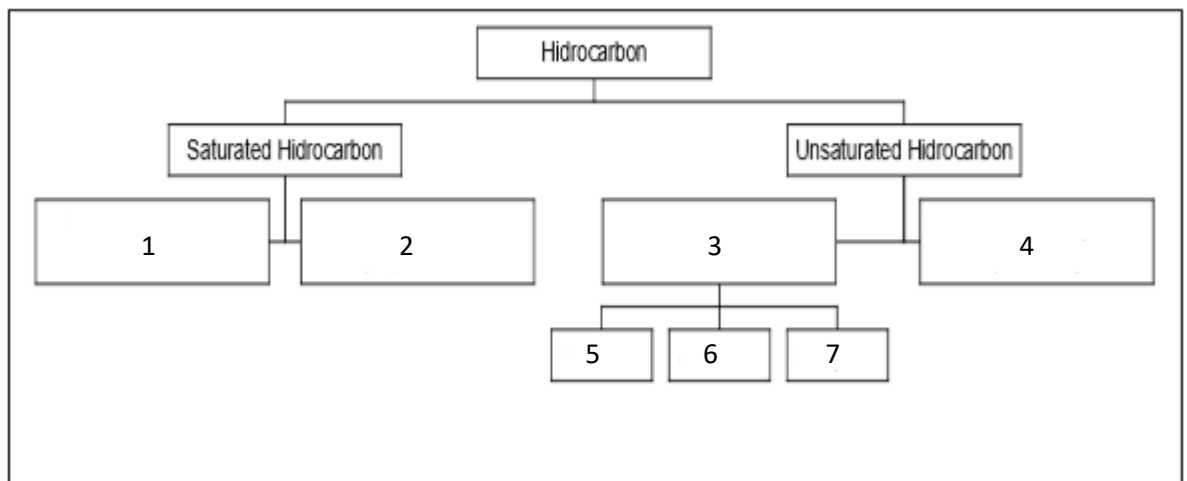


Figure 1(a) : Hydrocarbon classification.

Rajah 1(a) : Pengelasan hidrokarbon.

[7 marks]

[7 markah]

CLO1
C2

- (b) Petroleum is a complex mixture of many hydrocarbons. Identify by drawing the structural formula for the following hydrocarbon compounds:

Petroleum adalah merupakan larutan kompleks yang terdiri daripada pelbagai hidrokarbon. Kenalpasti dengan lukiskan formula struktur bagi sebatian hidrokarbon berikut:

- i. Cyclopentane
Siklopentana

[2 marks]
[2 markah]

- ii. 2,3-dimethylpentane
2,3-dimetilpentana

[2 marks]
[2 markah]

- iii. 1,2-dibromoethane
1,2-dibromoetana

[2 marks]
[2 markah]

- iv. Chlorobenzene
Klorobenzena

[2 marks]
[2 markah]

CLO1
C3

- (c) Alkynes are one of the aliphatic hydrocarbons. List the first **FIVE (5)** molecule and structure formula for alkynes.

Alkuna adalah salah satu hidrokarbon alifatik. Senaraikan formula molekul dan struktur bagi LIMA (5) sebutan pertama bagi alkuna.

[10 marks]
[10 markah]

QUESTION 2

SOALAN 2

CLO1
C1

(a) Describe the formation of rocks as follows:

Terangkan pembentukan batuan berikut:

i. Igneous rock

Batuan Igneus[2 marks]
[2 markah]

ii. Sediment rock

Batuan Sedimen[2 marks]
[2 markah]

iii. Metamorphic rock

Batuan Metamorfik[3 marks]
[3 markah]CLO1
C2(b) i. Identify **FOUR (4)** factors of petroleum reservoir formation.*Tentukan **EMPAT (4)** faktor pembentukan takungan petroleum.*[4 marks]
[4 markah]ii. Demonstrate by drawing **THREE (3)** structural trap in petroleum reservoir.*Demonstrasikan dengan melukis **TIGA (3)** perangkap struktur bagi takungan petroleum.*[6 marks]
[6 markah]

CLO1
C3

(c) Demonstrate the following driven mechanism of petroleum reservoir:

Demonstrasikan mekanisma pacuan bagi takungan petroleum berikut:

i. Accelerated of dissolved gas.

Pacuan gas terlarut.[2 marks]
[2 markah]

ii. Accelerated lid gas trap.

Pacuan gas tak terlarut.[2 marks]
[2 markah]

iii. Water accelerator.

Pacuan air.[2 marks]
[2 markah]

iv. Combination driven.

Kombinasi pacuan.[2 marks]
[2 markah]

QUESTION 3

SOALAN 3

CLO2
C1

- (a) State
- THREE (3)**
- equipment used for casing installation in the wellbore.

*Nyatakan **TIGA (3)** peralatan untuk pemasangan selongsong di dalam “wellbore”.*

[7 marks]

[7 markah]

CLO2
C2

- (b) Explain the function of rotating system as follow:

Jelaskan fungsi bagi peralatan sistem putar yang berikut:

- i. Kelly Bushings

Kelly Bushings

[2 marks]

[2 markah]

- ii. Main Bushings

Main bushings

[2 marks]

[2 markah]

- iii. Rotary Table

Rotary table

[2 marks]

[2 markah]

- iv. Slip Screwdriver

Slip screwdriver

[2 marks]

[2 markah]

CLO2
C3

- (c) Classify
- FIVE (5)**
- functions of valve types that involve controlling the flow of fluid from the well, which is installed on the Christmas Tree.

*Kelaskan **LIMA (5)** fungsi jenis-jenis injap yang digunakan untuk mengawal aliran bendalir dari punca yang dipasang pada pokok Krismas.*

[10 marks]

[10 markah]

QUESTION 4

SOALAN 4

CLO2
C1

- (a) List **SEVEN (7)** factors to be considered in designing a gas processing plant.
*Senaraikan **TUJUH (7)** faktor yang perlu diambil kira untuk merekabentuk loji pemprosesan gas.*

[7 marks]
 [7 markah]

CLO2
C2

- (b) Explain **FIVE (5)** major process units for gas processing.
*Terangkan **LIMA (5)** unit utama pemprosesan bagi pemprosesan gas.*

[10 marks]
 [10 markah]

CLO2
C3

(c)

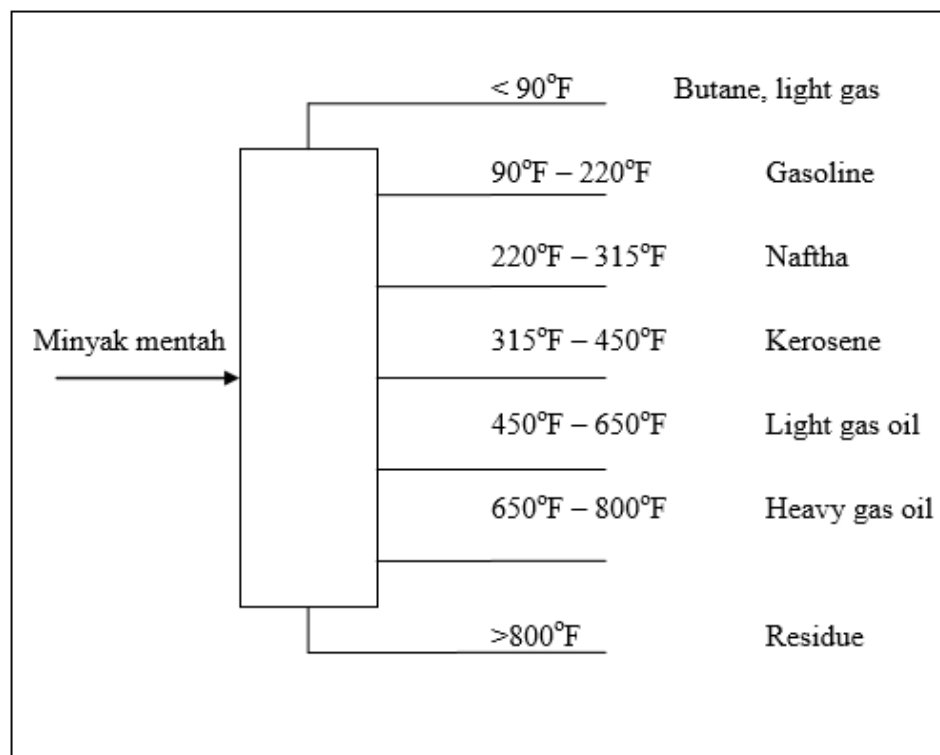


Figure 4(c): The Fractional Distillation of Crude Oil
 Rajah 4(c): Penyulingan Berperingkat Minyak Mentah

By referring to Figure 4(c), determine the initial boiling point and final boiling point for Naphta, Kerosene, Light gas oil and Heavy gas oil.

Berdasarkan Rajah 4(c), tentukan takat didih awal dan takat didih akhir untuk Nafta, Kerosin, Minyak gas ringan dan Minyak gas berat.

[8 marks]

[8 markah]

SOALAN TAMAT