

fractions

Chemistry (IGCSE) Percentage%

NameClass.....

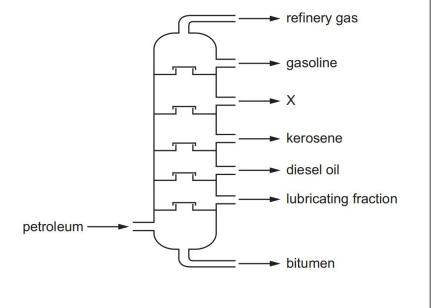
Exercise of Chap 18 (Alkane&Alkene)

I MCQs

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

Reflection

What is the name of fraction X?



Reflection

- alcohol
- fuel oil В
- naphtha C
- paraffin D
- X, Y and Z are three hydrocarbons.
 - X CH₂=CH₂
- Y CH₃-CH=CH₂
- Z CH₃-CH₂-CH=CH₂

What do compounds X, Y and Z have in common?

- They are all alkenes.
- They are all part of the same homologous series.
- They all have the same boiling point.
- 1, 2 and 3
- B 1 and 2 only
- C 1 and 3 only D 2 and 3 only

3	Whi	◆ Reflection					
	Α	bromination					
	В	hydration/rea					
	С	hydrogenatio					
	D	hydrolysis					
4							_
4	In br	ight sunlight, eth	nane and o	hlorii	ne combine in s	ubstitution reactions.	
	Whic	ch compound is	not formed	d in tl	nese reactions?	•	
	Α	C₂H₃C <i>l</i>	B C ₂ H ₅ C	<i>1</i>	C C ₂ H ₄ C	Cl_2 D HC l	
\dashv							
5	Whic	ch products are	obtained b	oy the	e cracking of ar	n alkane?	1
		T	I				
		alkene	hydroge	en	water		
	A	/	√		√		
	В	1	√		X		
	С	V	X		√		
	D	X			√		_
6	Potre	oloum is an imno	ertant raw n	nator	ial that is sonars	ated into useful products.	
	Which terms describe petroleum and the method used to separate it?						
		description	on	sepa	ration method		
	A	compour			cracking		
	В	compour		fraction	onal distillation		
	C	mixture		fracti	cracking onal distillation		
	D	mixture		nactio	onai distiliation		

7	7 Which statements about propene are correct? • Reflection								
	VVIIIC		TOUTIOU HOUSE						
		1 Propene cont							
		2 Propene deco							
		3 Propene is ob							
		4 Propene is a							
	A ´	and 4 B 2,							
8	Whi	ch compound rapidly	y decolourises aqueo	us bromine?					
	Α	propane							
	В	propanoic acid							
	С	propanol							
	D	propene							
9	Propene is an alkene that reacts with bromine, steam and hydrogen as shown.								
			н Н						
			c=c-c-	-Н					
	./ []								
			н н н	`					
	bromine steam hydrogen								
	J K L								
	vvnat	are the products of thes	_						
		J							
	A	bromopropane	propanol	butane					
	В	dibromopropane	propanoic acid	propane					
	С	dibromopropane							
	D	bromopropane							

1	Eth au				◆ Reflection				
0	⊏inand	ol is a fuel used in cars. It ca							
			$C_4H_{10} \rightarrow C_2H_4 + C_2H_6$						
		C ₂ H ₄ +	$H_2O \rightarrow C_2H_5OH$	producing ethanol					
		C ₂ H ₅ OH -	$+ 3O_2 \rightarrow 2CO_2 + 3H_2O$	burning					
	Comp	ounds of how many homolo							
	A 1	B 2							
1	The p	partial structure of addition	polymer X is shown.						
1			CH ₃ H CH ₃ H						
			— <u>С—С—С—</u> Н СН ₃ Н СН _.	3					
	Which	n monomer is used to form	polymer X?						
	A C	CH ₂ =CH ₂							
		CH ₃ CH=CH ₂							
		CH ₃ CH=CHCH ₃							
		CH ₃ CH ₂ CH=CH ₂							
Н									
1 2	In whic	ch row are the monomer	and polymer chain corr	ectly matched?	_				
		monomer	part of the po	lymer chain					
	Α	CH ₃ CH=CHCH ₃	-CH(CH ₃)-CH(CH ₃)-	CH(CH ₃)–CH(CH ₃)–					
	В	CH ₂ =CHC <i>l</i>	-CHC1-CHC1-						
	С	CH ₃ CH=CH ₂	−CH ₃ −CH−CH ₂ −	CH ₃ –CH–CH ₂ –					
	D	CH ₂ =CHCH ₂ CH ₃	-CH ₂ -CH ₂ -CH ₂						

Ш	Structured questions	◆ Reflection
1	Two homologous series of hydrocarbons are the alkanes and the alkenes.	
	(i) One general characteristic of a homologous series is that the physical properties vary in a	
	predictable way.	
	State three other general characteristics of a homologous series.	
	[3]	
	The fractional distillation of crude oil usually produces large quantities of the heavier fractions. The market demand is for the lighter fractions and for the more reactive alkenes. The heavier fractions are cracked to form smaller alkanes and alkenes as in the following example.	
	$C_8H_{18} \longrightarrow C_4H_{10} + C_4H_8$ octane butane butenes	
	(a) (i) Write a different equation for the cracking of octane.	
	C ₈ H ₁₈ + [1]	
	(ii) The cracking of octane can produce isomers with the molecular formula C_4H_8 . Draw the structural formulae of two of these isomers.	
	[2]	

II	Stru	uctui	red questions	A Reflection	
2	(a)	Coa	ll is a solid fossil fuel.		◆ Reflection
		Nar	ne two other fossil fuels.		
				[2]	
		/::\	Evaluis subot is record by the term food! find		
		(ii)	Explain what is meant by the term fossil fuel.		
				[2]	
	/b\	Cros	line is the thoronal decomposition of allows into amplify budgecombane and		
	(a)		king is the thermal decomposition of alkanes into smaller hydrocarbons and sibly hydrogen.		
		(i)	State two conditions required for the cracking of an alkane.		
		(.,	Ciate 100 contained required for the cracking of an amane.		
				. [2]	
		(ii)	One type of cracking produces an alkane and an alkene.		
			Complete an equation for the cracking of heptane into an alkane and an alkene.		
				[4]	
			C ₇ H ₁₆ → +	[1]	
	(b)		cking is used to convert long chain alkanes into shorter chain alkanes and alkenes. A unsaturated compounds.	Alkenes	
		Dec	cane, C ₁₀ H ₂₂ , can be cracked to give propene and one other product.		
		(i)	Complete the chemical equation.		
			$C_{10}H_{22} \rightarrow C_3H_6 + \dots$		
				[1]	
		(ii)	What is meant by the term <i>unsaturated</i> ?		
				[1]	
		(iii)	Describe a test to show that propene is an unsaturated compound.		
			test		
			result		
			TOOK .	[2]	

 (c) Alkenes are more reactive than alkanes and are chemicals. Propene, CH₃-CH=CH₂, is made by of the addition product when propene reacts with the (i) water 	racking. Give the structural formula	◆ Reflection
(ii) bromine	[1]	
(iii) Dadwa the structural fermula of the ready.	[1]	
(iii) Deduce the structural formula of the product hydrogen chloride.	formed when propene reacts with	
	[1]	

3	The structures of five alkenes, A, B, C, D and E, are shown.	◆ Reflection
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
	(a) What is the general formula of alkenes?	
	[1]	
	(b) What is the molecular formula of alkene D? [1]	
	(c) Predict which alkene, A, B, C, D or E, has the highest boiling point. Explain your answer.	
	alkene	
	explanation	
	(e) A student added aqueous bromine to alkene C.	
	$ \begin{array}{c} \mathbf{C} \\ H \\ C = C \end{array} $	
	Describe the colour change seen and draw the structure of the product. Show all of the atoms and all of the bonds.	
	colour change from to to	
	structure	
	[2] (ii) State the reagent and conditions needed to produce an alcohol from alkene B.	
	reagent	
	conditions	
	[3]	