	JAB National 5 Chemistry JAB	on	Tra	ffic L	ight
	chem Unit 2.2a Alcohols chem	Lesson	Red	Amber	Green
19	Alcohols are used as fuels as they are highly flammable and burn with very clean flames		(3)	<u>(i)</u>	$\odot$
20	Alcohols are often used as solvents  • alcohol is the main constituent of methylated spirits (meths), a useful solvent		(3)	<b>(1)</b>	$\odot$
21	Methanol, ethanol and propanol are miscible with water, thereafter the solubility decreases as size increases  • miscible means that the alcohols mix with water and do not separate.  Alcohol Methanol Ethanol Propanol Butanol Pentanol Hexanol Heptanol Octanol		8	<b>⊕</b>	<b>③</b>
	No of Carbons         1         2         3         4         5         6         7         8				
	Solubility Very soluble in water  insoluble				<u> </u>
22	As increase in the size of an alcohol increases the melting & boiling points  • this is caused by the increasing strength of the intermolecular forces.    Alcohol   Methanol   Ethanol   Propanol   Butanol   Pentanol   Hexanol   Heptanol   Octanol		3	<b>(1)</b>	(i)
23	An alcohol is a molecule containing a hydroxyl –OH functional group.		8	<u> </u>	$\odot$
24	Saturated, straight-chain alcohols have the general formula C <sub>n</sub> H <sub>2n+1</sub> OH  • saturated alcohols do not contain C = C double bonds		8	<u></u>	$\odot$
25a 26a	H-C-C-C-C-OH H-C-C-C-H H-C-C-C-C-OH H-C-C-C-C-H H-C-C-C-C-C-H H-C-C-C-C-C-		⊗	<b>(2)</b>	©
25b 26b	Alcohols with branched chains can be drawn: $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		©	<b>①</b>	©

Na Traffic			Past Paper Question Bank Unit 2.2a Alcohols										J	ABO	che	M
Outcome	Original Specimen Paper	New Specimen Paper							Nat5 2020							
19																
20																
21																
22			mc13				mc14									
23	L8a	L8a	L8b(i)	L3a(i)	L12a	L12a		L2a								
24																
25a 26a						L14a(i)	mc13									
25b 26b			L8b(ii)	mc13												

Nat5	Answer	% Correct				R	easoning									
2014 <sup>MC</sup> 13	С	88	Alkar Boiling		Propan-1-o 97°C		pan-2-ol 82°C	Butan 118		Butan-2-	ol					
2015 Mc 13	A	81	☑A correct: ☑B Shortene ☑C Shortene ☑D Shortene	ed structi ed structi	ural form ural form	ula would ula would	be: CH30	CH(CH₃)C	Н(ОН)СЬ	н(СН₃)СН						
2018 Mc 13	A	-	⊠B Pentan-4 ⊠C 1-methyl	O Shortened structural formula would be: CH <sub>3</sub> CH(CH <sub>3</sub> )CH(OH)CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> A pentan-2-ol: five carbons linked by single bonds with -OH group in Carbon No 2  B Pentan-4-ol: The -OH group has not given the lowest numbering system  C 1-methylbutan-3-ol: Longest continuous chain of carbons with -OH group is 5  O 4-methylbutan-1-ol Longest continuous chain of carbons with -OH group is 5												
2018 MC 14	В	_	Alcohol Formula Melting Point Boiling Point Solubility Strength of Intermolecular Bonds	Methanol CH3OH low low high	Ethanol	Propanol	Butanol	Pentanol	Hexanol	Heptanol						

Nat5	Answer		Re	easoning							
2014 8b(i)	hydroxyl	The -OH group of	f the hydroxy	vl group.							
		Correct C5H11OH	diagram of:								
		pentan-1-ol	pen	itan-2-ol	pentan-3-ol						
2014	Any structure from:	2-methylb	utan-1-ol	2,2-dir	nethylpropan-1-ol						
8b(ii)	, , , , , , , , , , , , , , , , , , , ,	2-methylbi	utan-2-ol	3-me	ethylbutan-2-ol						
		_	IB: diagram must be different from 3-methylbutan-1-ol in question and not a edrawing of same 3-methylbutan-1-ol structure.								
2015 <b>3a</b> (i)	hydroxyl	Hydroxyl groups ar the structure -OH		functional group found in all alcohols and l H							
2016 <b>12a</b>	Hydroxyl group		—O—H	O	DH						
2017 <b>12a</b>	C=C double bond or -OH group	C=C double bonds a Hydroxyl -OH grou	re the function	• .							
2017 14a(i)	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	H C-OH H Methanol H H H H-C-C-C-C-C	Ы Н-С-( Н-С-(	H H - C- C-OH H H Ethanol T H H C- C- C- C-OH H H H	H H H H- C- C- C- OH H H H  Propan-1-ol H H H H H- C- C- C- C- C- OH H H H H H Hexan-1-ol						
2019 <b>2a</b>	Hydroxyl		—O—H	O    - C - C   carboxyl gro							

Na Traffic		Past Paper Question Bank Unit 2.2a Alcohols												JABchem			
Outcome	<u>Int2</u> 2000	 <u>Int2</u> 2002							<u>Int2</u> 2009			<u>Int2</u> 2012	<u>Int2</u> <u>2013</u>				
19																	
20																	
21																	
22		mc11															
23		L5b(ii)			mc11			L6a		L9c			L13a(ii)				
24																	
25a 26a					L6a(i)	L7a					L9c	L7c			L6a		
25b 26b																	

Int2	Answer	% Correct		Reasoning											
2002	_			Substance	Α	В	С	D							
MC	C	78		Name	Propan-1-ol	Propan-2-ol	Butan-1-ol	Butan-2-ol							
11		'	Boi	iling Point (°C)	97	82	117	100							
2005 MC 11	В	66	☑B Molecul ☑C Molecul	le shown has C: e is unsaturate e shown has C: le shown has hy	ed (C=C doub =C double bor	le bond) and ond ond ond one	an alcohol (co aturated	_	·						

Int2	Answer	Reasoning
2002 <b>5</b> b(i)	− <b>0-</b> H	Alcohols contain the hydroxyl -OH functional group
2005 <b>6a</b> (i)	H OHH	propan-2-ol 3 carbons -OH hydroxyl group functional group on carbon no. 2
2006 <b>7</b> a	H H H-C-C-OH H H	Ethanol is a 2 carbon structure.  Ethanol is an alcohol with a hydroxyl -OH functional group
2008 <b>6a</b>	hydroxyl	The hydroxyl group is the -OH group
2010 <b>9</b> c	-OH group circled	The hydroxyl functional group has the formula -O-H
2011 <b>9</b> c	H H H—C—C—OH H H	Ethanol is a 2 carbon structure.  Ethan <u>ol</u> is an alcohol with a hydroxyl -OH functional group
2012 <b>7</b> c	One from:	Butan-1-ol         2-methylpropan-1-ol         2-methylpropan-2-ol           C₄H₂OH         C₄H₂OH         C₄H₂OH           H         H         H <tr< td=""></tr<>
2013 13a(ii)	-OH group (bottom on the right)	Hydroxyl groups have the formula -OH  Carboxyl -COOH groups contain an -OH group within the structure but the proximity of the C=O group to the -OH group changes the properties of the -OH group to the properties of the carboxyl -COOH group.
2015 <b>6a</b>	Propan-2-ol	Propan -2- ol  3 carbons -OH on C2 -OH functional group

	Nat5 Traffic Lights Past Paper Question Bank Unit 2.2a Alcohols  JABCHEM														M	
Outcome					2004 Credit											
19																
20																<u> </u>
21																<u> </u>
22																
23																l
24														15a		
25a 26a											20a(i)					
25b 26b																

SG Credit	Answer				Reasoning							
2010 <i>C</i> <b>20a</b> (i)	Propanol	H—C— H—C— H metho		H	H - C— OH H thanol	H	H H - C — C — O H H oropanol	н Н—	H H H H C-C-C-C-C H H H H butanol	Н		
				Eth	anol			Propa	n-2-ol			
2013 <i>C</i>	$C_nH_{2n+1}OH$	If fo	rmula wri	itten as:	Molecular forn	nula:	If formula wr	itten as:	Molecular formula:			
4=	or		C <sub>2</sub> H <sub>5</sub> OH		C₂H <sub>€</sub>	O	C <sub>3</sub> H <sub>7</sub> C	)H	C₃H <sub>8</sub> O			
15a	$C_{n}H_{2n+2}O$	If n	2 then	2n+1=5	If n=2 ther	2n+2=6	If n=3 then	2n+1=7	If n=3 then 2n+2=8			
	Oni 12n+20	::	∴ C <sub>n</sub> H <sub>2n+1</sub> OH		∴ C <sub>n</sub> H <sub>2n+2</sub> O		∴ C <sub>n</sub> H <sub>2n+1</sub> OH		∴ C <sub>n</sub> H <sub>2n+2</sub> O			

	Nat5 Past Paper Question Bank Unit 2.2a Alcohols  Value of the paper Question Bank Unit 2.2a Alcohols														M	
					Uni	T <b>2</b> .	2a /	AICOI	nois					11.2	A D S SH	
Outcome	<u>2000</u> <u>General</u>		<u>2002</u> <u>General</u>										<u>2012</u> <u>General</u>	<u>2013</u> <u>General</u>		
19																
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25a 26a																
25b 26b																