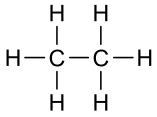
8. Organske spojine

8.1 Vrste organskih spojin

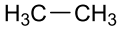
1. b, c, d, f

2. a)



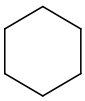
A

strukturna



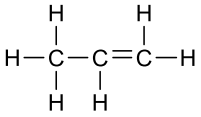
B

racionalna



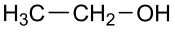
C

skeletna



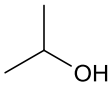
Č

strukturna



D

racionalna

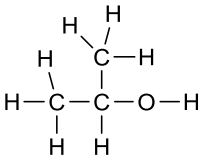


E

skeletna

F

molekulska

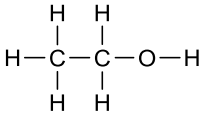


G

strukturna

H

racionalna

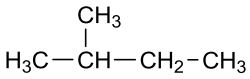


I

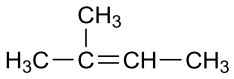
strukturna

b) Iste molekule so: Č, F in H; D in I; E in F.

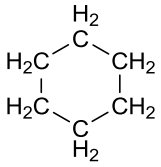
3.



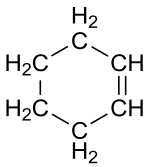
A



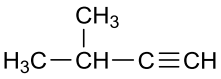
B



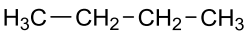
C



Č



D



E

acikličnе	A, B, D, E
ciklične	C, Č
nasičene	A, C, E
nenasičene	B, Č, D

8.2 Poimenovanje organskih spojin

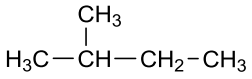
1. a)

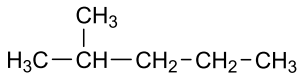
Formula	**Število C-atomov**	**Ime**
CH_4	1	metan
CH_3CH_3	2	etan
$CH_3CH_2CH_2CH_3$	4	butan
$CH_3CH_2CH_2CH_2CH_3$	5	pentan
$CH_3CH_2CH_2CH_2CH_2CH_3$	6	heksan
$CH_3CH_2CH_2CH_2CH_2CH_2CH_2CH_3$	8	oktan

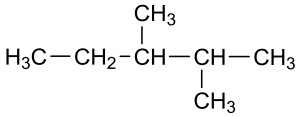
b) končnico -an
c) alkani
č) 5 ogljikovih atomov

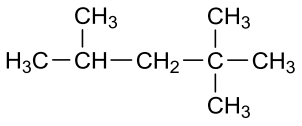
2. Kaj nam pove ime heksen?
a) 6
b) dvojno vez
c) alkene

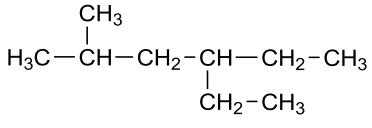
3. Imenuj naslednje razvejene alkane.

a)  2-metilbutan

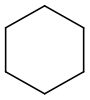
b)  2-metilpentan


c) 2,3-dimetilpentan

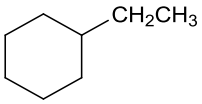

č) 2,2,4-trimetilpentan


d) 3-etil-2-metilheksan

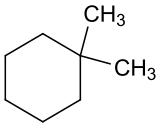
4.

a) 

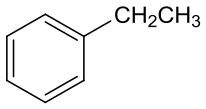
cikloheksan___

b) 

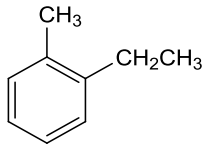
etilcikloheksan

c) 

1,1-dimetilcikloheksan

č) 

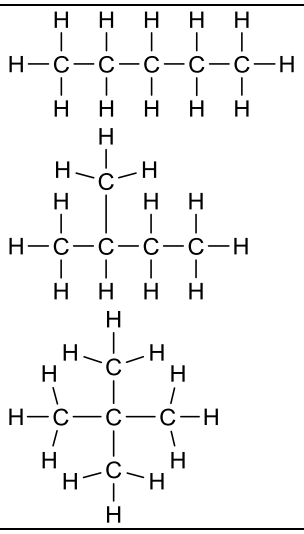
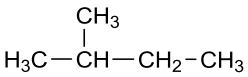
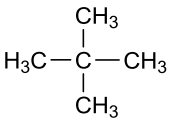
etilbenzen

d) 

1-etil-2-metilbenzen

5. a) 3

b)

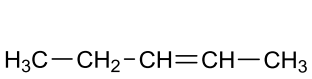
Strukturne formule	**Racionalne formule, imena**
	$H_3C-CH_2-CH_2-CH_2-CH_3$ pentan  2-metilbutan  dimetilpropan

6. a) heks-1-en (ali 1-heksen)

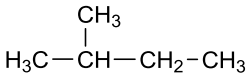
b) $H_3C-CH_2-CH_2-CH=CH-CH_3$
heks-2-en (ali 2-heksen)

$H_3C-CH_2-CH=CH-CH_2-CH_3$
heks-3-en (ali 3-heksen)

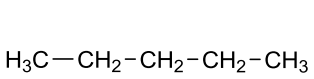
7.



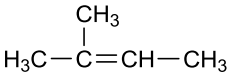
A



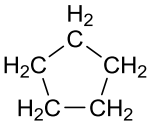
B



C



Č

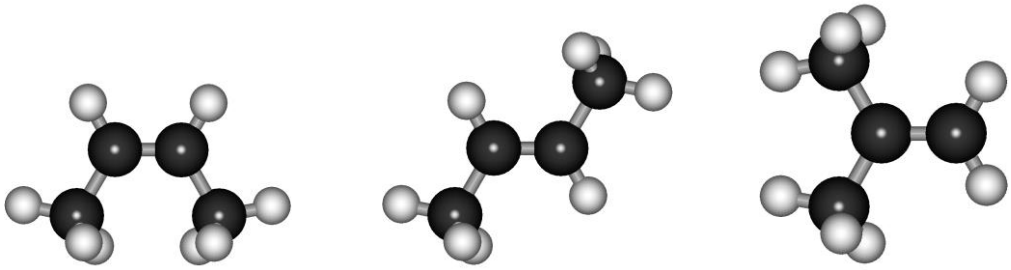


D

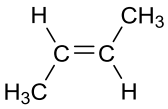
Molekulske formule:
A C_5H_{10} B C_5H_{12} C C_5H_{12} Č C_5H_{10} D C_5H_{10}

Izomeri so: A, Č in D ter B in C.

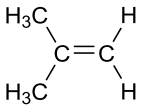
8. a)



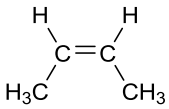
A B C



B



C

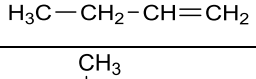
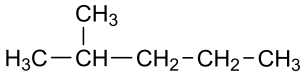
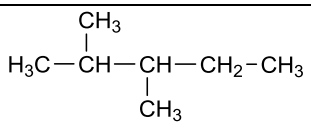
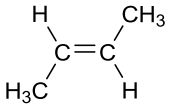


A

b) V čem se razlikujeta molekuli:
A in B: v prostorski razporeditvi metilnih skupin na dvojni vezi (A ima konfiguracijo *cis*, B pa *trans*)
A in C: A in C sta strukturna izomera; pri A sta metilni skupini vezani na različna C-atoma, pri C pa sta obe metilni skupini na istem C-atomu
B in C: B in C sta strukturna izomera; pri B sta metilni skupini vezani na različna C-atoma, pri C pa sta metilni skupini na istem C-atomu.

c)
A *cis*-but-2-en
B *trans*-but-2-en
C metilpropen

9.

Formula	Nepopolno ime	Napiši popolno ime
	buten	but-1-en
	metilpentan	2-metilpentan
	2,3-metilpentan	2,3-dimetilpentan
	but-2-en	*trans*-but-2-en

8.3 Lastnosti organskih spojin

Poskus 21 Določimo relativno gostoto nekaterih organskih snovi

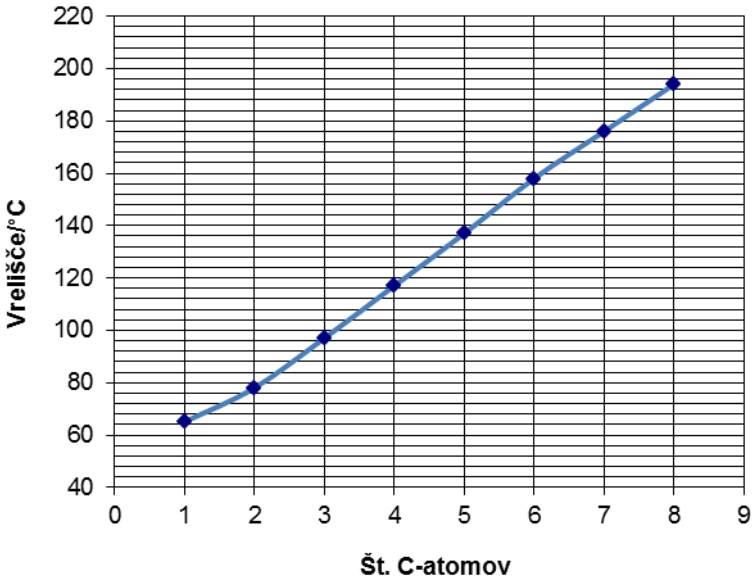
Gostota	alkan	olje	dikloro-metan	sladkor	plastenka	zamašek
manjša od vode	✓	✓				✓
večja od vode			✓	✓	✓	

Pravilne trditve:
b) Ogljikovodiki (alkani) imajo manjšo gostoto od vode.
č) Plastenka in zamašek sta izdelana iz različnih polimerov.
d) Diklorometan ima večjo gostoto od vode, ker njegove molekule vsebujejo težke atome (Cl).

Vrelišča in topnost v vodi alkoholov
1.

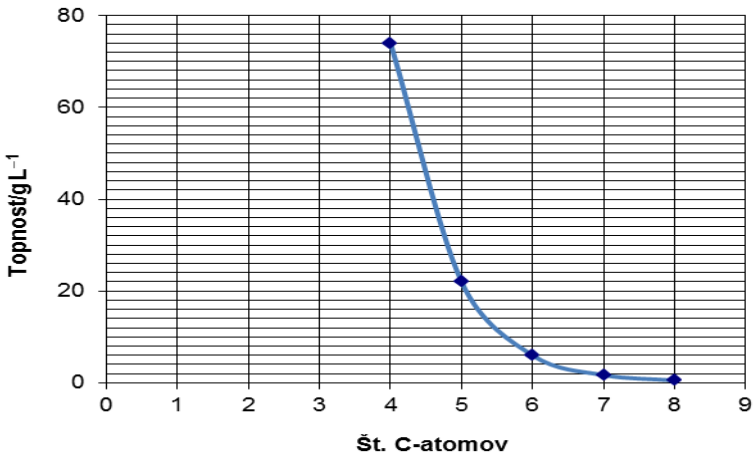
Število C-atomov	Racionalna formula alkohola	Ime alkohola	Vrelišče /°C	Topnost v vodi/g L^{-1}
1	CH_3OH	metanol	65	∞
2	CH_3CH_2OH	etanol	78	∞
3	$CH_3CH_2CH_2OH$	propan-1-ol	97	∞
4	$CH_3CH_2CH_2CH_2OH$	butan-1-ol	117	74
5	$CH_3CH_2CH_2CH_2CH_2OH$	pentan-1-ol	137	22
6	$CH_3CH_2CH_2CH_2CH_2CH_2OH$	heksan-1-ol	158	6
7	$CH_3CH_2CH_2CH_2CH_2CH_2CH_2OH$	heptan-1-ol	176	1,7
8	$CH_3CH_2CH_2CH_2CH_2CH_2CH_2CH_2OH$	oktan-1-ol	194	0,54

2. a)



b) Vrelišče narašča.
c) 18 °C
č) Vrelišče nonanola je približno 212 °C.

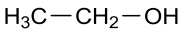
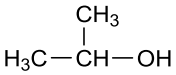
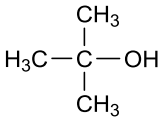
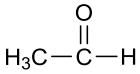
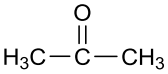
3. a)



b) Topnost pada.
c) Ti alkoholi se mešajo z vodo v vseh razmerjih.

8.4 Pretvorbe organskih spojin

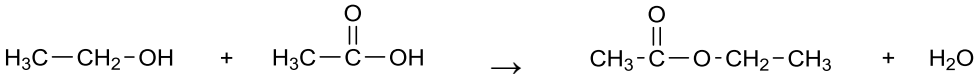
Poskus 22 Oksidacija alkoholov

	etanol	**propan-2-ol**	**2-metilpropan-2-ol**
Barva raztopine	zelena	zelena	oranžna
Alkohol: se oksidira da/ne	da	da	ne
Racionalna formula alkohola			
Vrsta alkohola (primarni ...)	primarni	sekundarni	terciarni
Racionalna formula produkta			–
Ime produkta	etanal	propanon	–
Vrsta spojine (produkta)	aldehid	keton	–

Estri

Poskus 23 Priprava etil acetata

a) ne
b) na lepilo (ali odstranjevalec laka za nohte)
c) da
č)



etanol ocetna kislina → etil acetat + voda

č) voda