

**OLIMPIADA DE CHIMIE – etapa județeană**
4 martie 2017**BAREM DE EVALUARE - Clasa a XI-a****Subiectul I.....20 puncte****A.8 puncte**a) Calcularea masei moleculare: $M = 100$ **0,4 p**Determinarea formulei moleculare: C_xH_yO ; $M = 12x + y = 100$; formula moleculară: $C_6H_{12}O$;NE = 1 **2 p**

b)

7 formule structurale X 0,8 p = 5,6 p**B.12 puncte**

a)

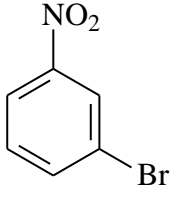
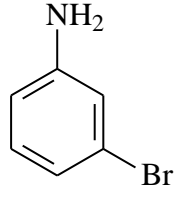
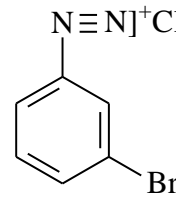
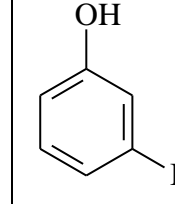
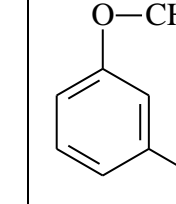
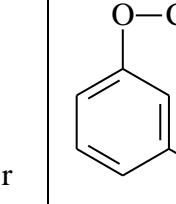
9 formule structurale X 0,8 p = 7,2 p**9 denumiri x 0,3 p = 2,7 p**

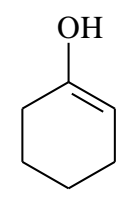
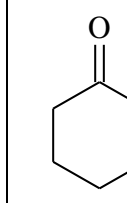
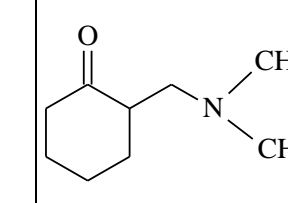
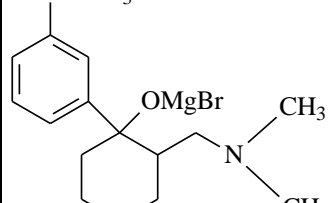
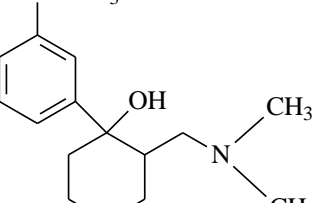
b) Când este utilizat paladiul otrăvit cu săruri de plumb drept catalizator, rezultă cis-alechena. Regioselectivitatea este determinată de faptul că moleculele activate de hidrogen sunt adsorbite la suprafața catalizatorului, legându-se de aceeași parte de atomii de carbon implicați în legătura triplă.

2,1 p

Subiectul II.....25 puncte

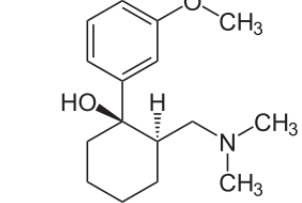
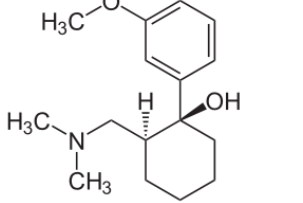
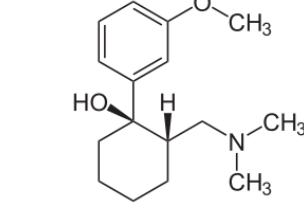
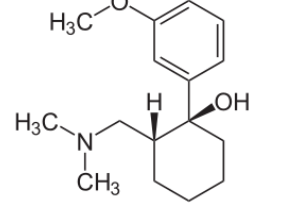
a)

					
A - 1p	B - 1p	C - 1p	D - 1p	E - 1p	F - 1p

				
G - 1p	H - 1p	I - 2p	J - 2p	K - 2p

b) 6 ecuații X 0,5p = 3p

c) Tramadolul are doi atomi de C asimetrici diferiți. Rezultă că sunt posibili 4 stereoizomeri (2 perechi de enantiomeri).

			
1 - 2p	2 - 2p	3 - 2p	4 - 2p

Subiectul III..... 25 puncte

a) A: C_xH_y $M_A = 12x + y = 26$; A = C_2H_2 – acetilena

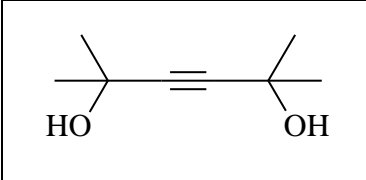
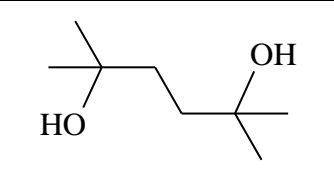
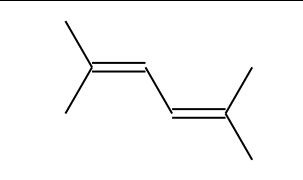
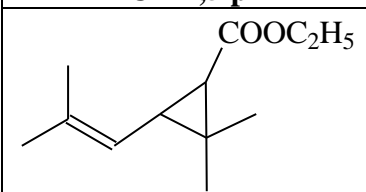
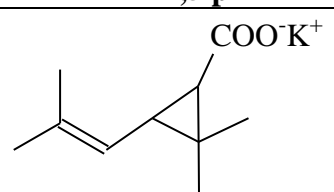
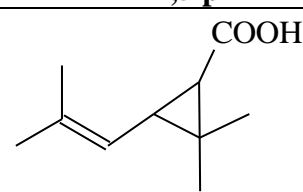
1p

B: C_aH_bO ; $M_B = 12a + b + 16 = 58$; B: C_3H_6O – propanona

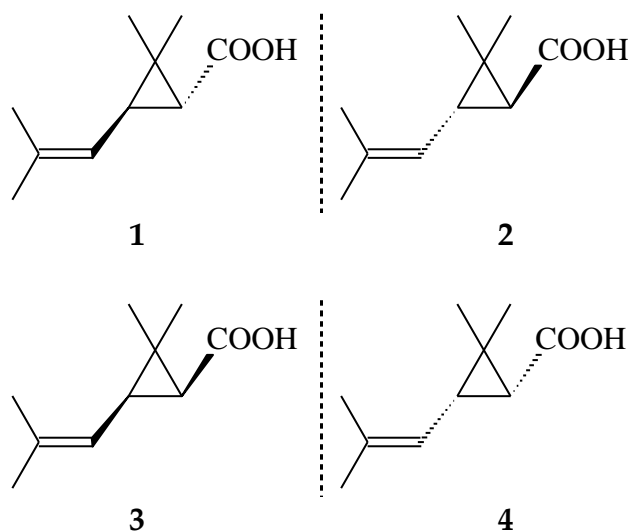
2p

b) H – acid crizantemic – acid monocarboxilic; H: $C_{10}H_{16}O$

3p

		
C - 1,5 p	D - 1,5 p	E - 1,5 p
		
F - 2 p	G - 1,5 p	H - 2 p

Denumirea substanțelor C, D și E – 1,5 p



2 atomi de C asimetrici diferiți – 4 stereoisomeri (2 perechi de enantiomeri)

4 formule de configurație: 4 x 1,5p = 6p

1 și 2 – enantiomeri; 3 și 4 enantiomeri

1 și 3 – diastereoizomeri; 1 și 4 – diastereoizomeri, 2 și 3 – diastereoizomeri, 2 și 4 – diastereoizomeri

6 relații X 0,25p = 1,5p

Subiectul IV..... 30 puncte

a) C : H : O = 10 : 16 : 1 (raport atomic); formula moleculară: $(C_{10}H_{16}O)_n$; $M < 200 \text{ g/mol} \Rightarrow n = 1$

Formula moleculară a felandalului: $C_{10}H_{16}O$

3p

b) N.E. = 3; 3 elemente structurale

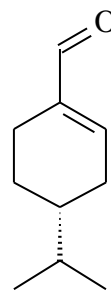
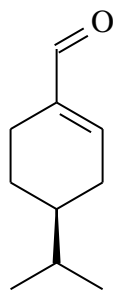
4 X 0,25p = 1 p

c) Substanța C are în moleculă o grupă hidroxil de tip fenolic.

A – 1p	B – 1p	C – 1p	D – 1p	E – 1p	F – 1p

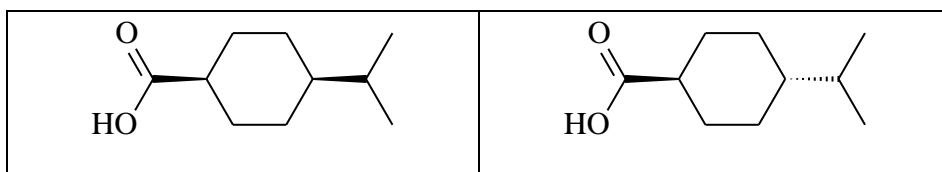
G – 2p	H – 2p	I – 2p	J – 2p	K – 2p

d) Felandralul are un atom de C asimetric \Rightarrow prezintă 2 stereoizomeri (1 pereche de enantiomeri)



2 formule structurale X 2p = 4p

e) diastereoizomeri geometrici (izomeri cis-trans) – 2p



2 formule structurale X 2p = 4p

Notă:

Notă: La toate subiectele se va puncta corespunzător orice altă variantă de rezolvare care respectă condițiile din enunț.

La reprezentarea stereoizomerilor se pot folosi fie formule de configurație, fie formule de proiecție.

Barem elaborat de Vasile Sorohan., profesor la Colegiul Național "Costache Negruzzi" din Iași