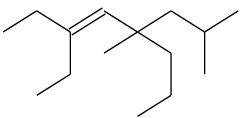
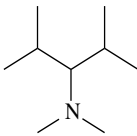
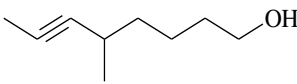
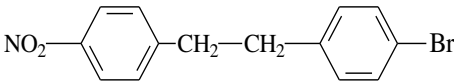
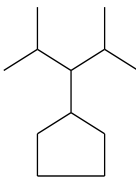
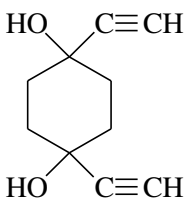
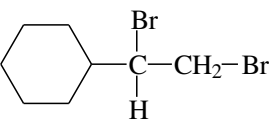
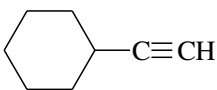
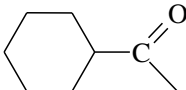
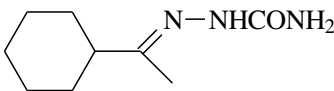
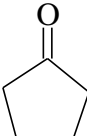
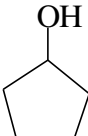
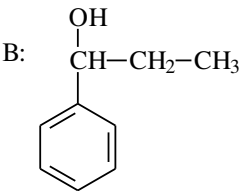
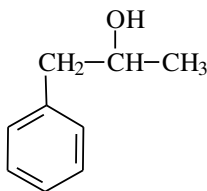
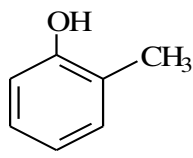
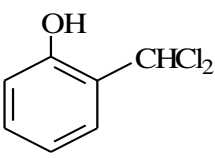
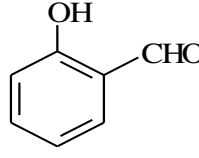
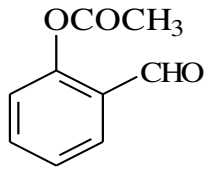
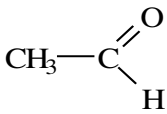
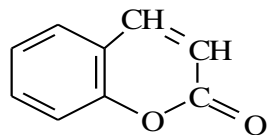
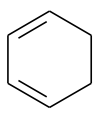
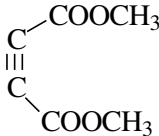
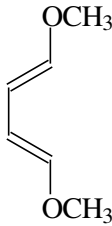
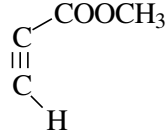
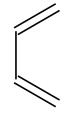
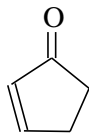
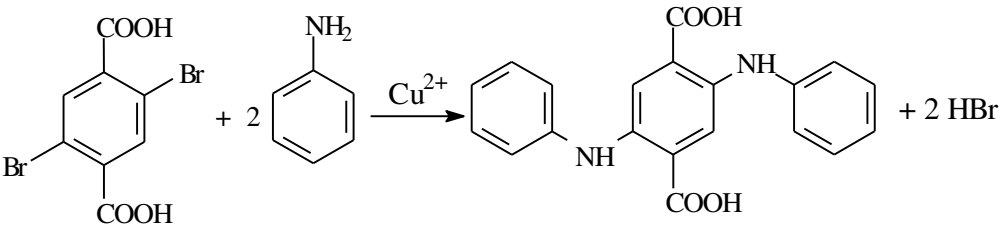
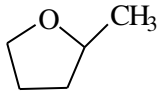


OLIMPIADA DE CHIMIE – etapa județeană
22 februarie 2014

BAREM DE EVALUARE - Clasa a XI-a

Subiectul I20 puncte	
A. 1.  a)  b)  c)  d)  e)	5 puncte
2. a) 2 stereoizomeri; b) 0 stereoizomeri; c) 4 stereoizomeri;	3 puncte
3. a) metanol - $pK_{a4} = 16$; fenol - $pK_{a2} = 10$; acid p-clorobenzoic - $pK_{a1} = 3,99$; acid-2nitrobenzoic- $pK_{a3} = 2,17$. b) I > IV > II > III	4,5 puncte
B. 1) A: CH_3COOH B: $HCOOH$	5 puncte
2) D: 	
3) E: $CH_3-CH_2-C \equiv C-CH_2-CH_3$ F: $CH_3-CH_2-CH=CH-CH_2-CH_3$ G: $CH_3-CH_2-\underset{\text{OH}}{\underset{ }{CH}}-\underset{\text{OH}}{\underset{ }{CH}}-CH_2-CH_3$	
4) J:  L:  M:  N: 	

5) R:  T:  1. O₃ 2. H₂/NaBH₄/LiAlH₄ 3. H⁺	2,5 puncte
Subiectul II 25 puncte	
A. N.E.=4; A: $\text{CH}_2=\underset{\text{CH}_3}{\text{C}}-\underset{\text{CH}_2-\text{OH}}{\text{CH}}=\underset{\text{CH}_2-\text{OH}}{\text{C}}-\text{CH}_2-\text{C}\equiv\text{CH} + 13 [\text{O}] \longrightarrow \text{O}=\underset{\text{CH}_3}{\text{C}}-\text{COOH} + \begin{array}{c} \text{COOH} \\ \\ \text{C}=\text{O} \\ \\ \text{CH}_2 \\ \\ \text{COOH} \end{array} + 2 \text{CO}_2 + 2 \text{H}_2\text{O}$ A are 2 izomeri geometrici ; B are 2 izomeri optici ; Scrierea corectă a formulelor de structură pentru acid piruvic, acid oxosuccinic; Scriere corectă structură izomer B B:  sau 	9 puncte
B. Scriere corectă structuri A: CH₄; B: CH≡CH; C: C₆H₆; D: C₆H₅-OH; E: CH₃-Cl F:  G:  H:  I:  J:  K: CH₃-COOH L: CH₃COCl 1,2 benzopironă: 	13 puncte
C. Identificare structuri diene și filodiene a)  +  b)  +  c)  + 	3 puncte

d) identificare D 	3 puncte
Subiectul IV 30 puncte	
A. a) $[\alpha] = \frac{100 \times \alpha}{l \times c}$; $[\alpha] = -13,5^{\circ}$	7 puncte
b) raport izomer levogir:dextrogir = 7:3	3 puncte
B. a) $M_{(CH_3-COOAg)} = 167 \text{ g/mol}$; $M_A = 88 \text{ g/mol}$; Identificare A = $C_5H_{11}OH$, structură A = $CH_3-(CH_2)_4-OH$	4 puncte
b) identificare structură B = 2-metil-tetrahidrofuran; scriere ecuație B cu HI $B + 2 HI \xrightarrow{-H_2O} I-CH_2-CH_2-CH_2-\underset{\substack{ \\ I}}{CH}-CH_3$ 	3 puncte
c) 4 ecuații x 2p $\begin{array}{c} H_2C-COOH \\ \\ H_2C-COOH \end{array} \xrightarrow{-H_2O} \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \quad O \end{array} \xrightarrow[-H_2O]{+NH_3} \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \quad NH \end{array} \xrightarrow{+Br_2}$ $\longrightarrow \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \quad N-Br \end{array} \xrightarrow{+NaI} \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \quad N-I \end{array} + NaBr$ NIS	8 puncte
d) ecuația reacției; $CH_3-CH_2-CH_2-CH_2-OH + \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \quad N-I \end{array} + CH_3COOAg \xrightarrow{\text{lumină}}$ $\longrightarrow \text{Structure of tetrahydrofuran} + AgI + \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \quad NH \end{array} + CH_3COOH$ $M(C_4H_{10}O) = 74 \text{ g/mol}$; $M(C_4H_8O) = 72 \text{ g/mol}$; $m(C_4H_8O) = 81 \text{ g}$	5 puncte

Barem elaborat de Lavinia Mureșan, profesor la Colegiul Național Alexandru Papiu Ilarian din Târgu Mureș

Notă: Orice variantă corectă de rezolvare se va lua în considerare.