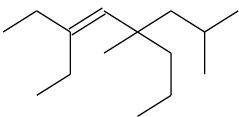
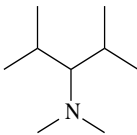
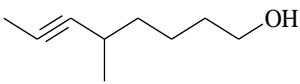
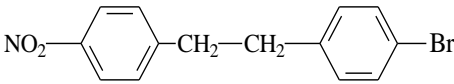
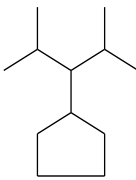
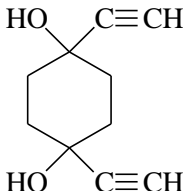
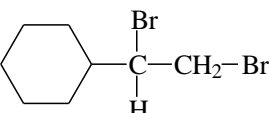
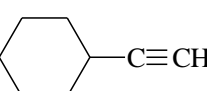
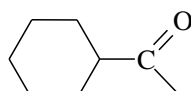
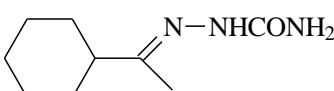
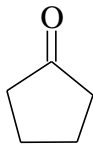
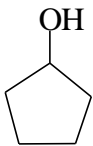
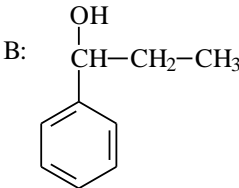
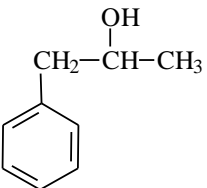
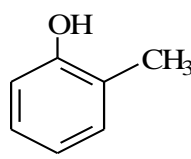
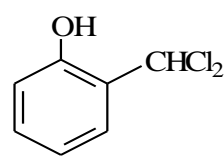
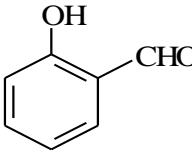
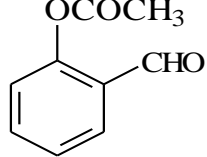
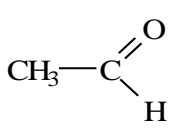
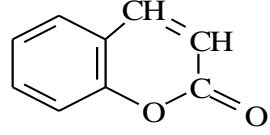
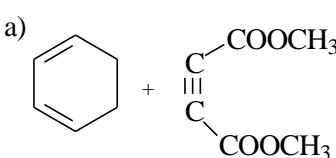
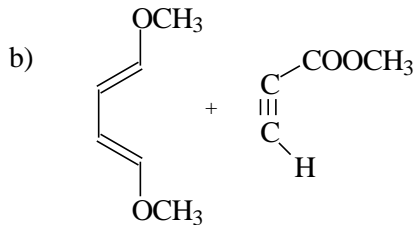
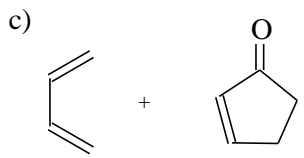
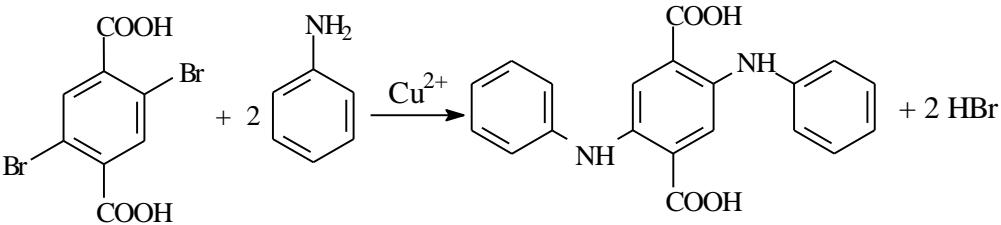
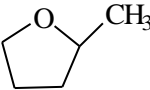


OLIMPIADA DE CHIMIE – etapa județeană
22 februarie 2014

BAREM DE EVALUARE - Clasa a XI-a

Subiectul I20 puncte	
<p>A. 1.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  a) </div> <div style="text-align: center;">  b) </div> <div style="text-align: center;">  c) </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  d) </div> <div style="text-align: center;">  e) </div> </div>	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
<p>B.</p> <p>1) A: CH_3COOH B: $HCOOH$</p>	5 puncte
<p>2) D: </p>	
<p>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: $CH_3-CH_2-\underset{\text{OH}}{\underset{ }{CH}}-\underset{\text{OH}}{\underset{ }{CH}}-CH_2-CH_3$</p>	
<p>4) J:  L:  M:  N: </p>	

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

<p>d) identificare D</p> 	<p>3 puncte</p>
<p>Subiectul IV 30 puncte</p>	
<p>A. a) $[\alpha] = \frac{100 \times \alpha}{l \times c}$; $[\alpha] = -13,5^0$</p>	<p>7 puncte</p>
<p>b) raport izomer levogir:dextrogir = 7:3</p>	<p>3 puncte</p>
<p>B. a) $M_{(CH_3-COOAg)} = 167 \text{ g/mol}$; $M_A = 88 \text{ g/mol}$; Identificare A = $C_5H_{11}OH$, structură A = $CH_3-(CH_2)_4-OH$</p>	<p>4 puncte</p>
<p>b) identificare structură B = 2-metil-tetrahidrofuran; scriere ecuație B cu HI</p> $B + 2 HI \xrightarrow{-H_2O} I-CH_2-CH_2-CH_2-\underset{\substack{ \\ I}}{CH}-CH_3$ 	<p>3 puncte</p>
<p>c) 4 ecuații x 2p</p> $\begin{array}{c} H_2C-COOH \\ \\ H_2C-COOH \end{array} \xrightarrow{-H_2O} \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \end{array} O \xrightarrow[-H_2O]{+NH_3} \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \end{array} NH \xrightarrow{+Br_2}$ $\longrightarrow \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \end{array} N-Br \xrightarrow{+NaI} \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \end{array} N-I + NaBr$ <p style="text-align: center;">NIS</p>	<p>8 puncte</p>
<p>d) ecuația reacției;</p> $CH_3-CH_2-CH_2-CH_2-OH + \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \end{array} N-I + CH_3COOAg \xrightarrow{\text{lumină}}$ $\longrightarrow \text{Structure of tetrahydrofuran} + AgI + \begin{array}{c} H_2C-CO \\ \quad \diagup \\ H_2C-CO \end{array} NH + CH_3COOH$ <p>$M(C_4H_{10}O) = 74 \text{ g/mol}$; $M(C_4H_8O) = 72 \text{ g/mol}$; $m(C_4H_8O) = 81 \text{ g}$</p>	<p>5 puncte</p>

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.