Ministerul Educaţiei, Cercetării, Tineretului şi Sportului
OLIMPIADA NAŢIONALĂ DE CHIMIE
EDIŢIA a 44-a
PITEŞTI - 2010
Clasa a XI-a – Proba Teoretica

Barem de corectare

Subiectul I (20 puncte)

1-b; 2-b; 3-c; 4-b; 5-c; 6-e; 7-c; 8-d; 9-d; 10-a. (10x2=20 puncte)

Subiectul II (25 puncte)

1a **7 puncte**

Formula compusului A: $HC\equiv C\text{-}CH_2\text{-}CH=O$ (5 puncte)

Ecuatia reactiei (2 puncte)

$HC\equiv C\text{-}CH_2\text{-}CH=O + 3[Ag(NH_3)_2]OH \rightarrow Ag\text{-}C\equiv C\text{-}CH_2\text{-}COOH + 2Ag\downarrow + 6NH_3\uparrow + 2H_2O$

1b **3 puncte**

B: $CH_3\text{-}C\equiv C\text{-}CH=O$ (1,5 puncte) ; C: $HC\equiv C\text{-}CO\text{-}CH_3$ (1,5 puncte);

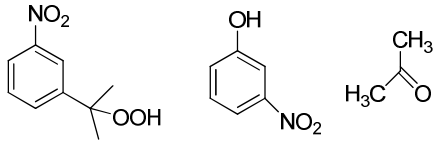
1c **6 puncte**

A1: $Cl\text{-}CH=CH\text{-}CH_2\text{-}CH=O$ (2 puncte) **;**

A2: $Cl_2CH\text{-}CH_2\text{-}CH_2\text{-}CH=O$ (2 puncte);

A3: $O=CH\text{-}CH_2\text{-}CH_2\text{-}CH=O$ (2 puncte);

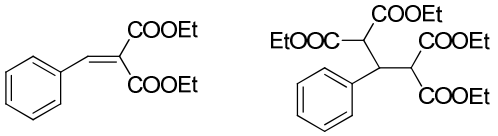
2a **3 puncte**



A B C

3 structuri x 1 punct = 3 puncte

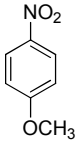
2b **3 puncte**



D E

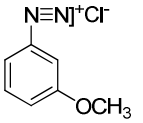
2 structuri x 1,5 puncte = 3 puncte

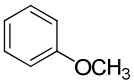
2c **1 punct**



F

2d **2 puncte**



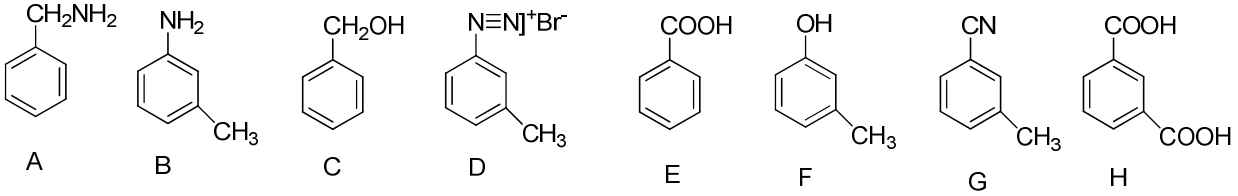


G H

2 structuri x 1 punct = 2 puncte

Subiectul III (15 puncte)

1a. **8 puncte**



A B C D E F G H

8 formule x 1 punct = 8 puncte

1b **2 puncte**

V N_2 (4) = 0.336L → ν N_2 =0.015 moli → νD (4)=0.015 moli → νB =0.03 moli

V N_2 (1) = 0.224L → ν N_2 (1) =0.01 moli → νA =0.01moli

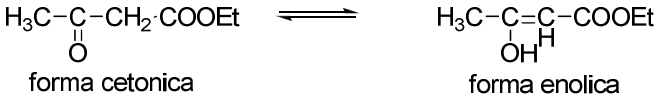
2. **5 puncte**

Viteza relativa	13	1300	0,01	0,4	1
Substituentul (R)	SO_3^-	NO_2	O-CH_3	CH_3	H

Subiectul IV. (30 puncte)

a. **8 puncte**

Structurile formelor cetonica si enolica

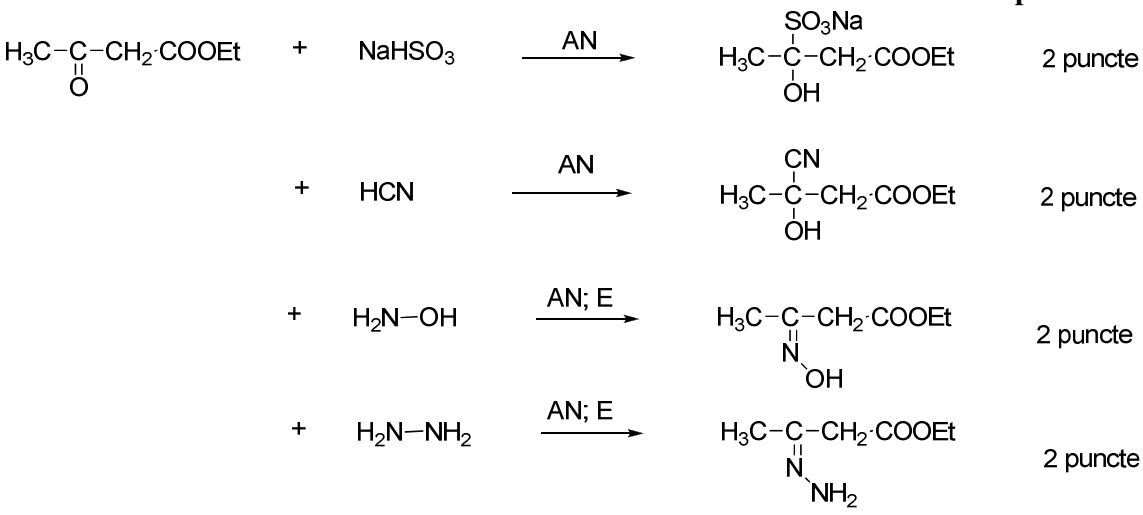


forma cetonica forma enolica

3 puncte 3 puncte

caracterul acid al compusului este dat de forma enolica 2 puncte

b. **12 puncte**

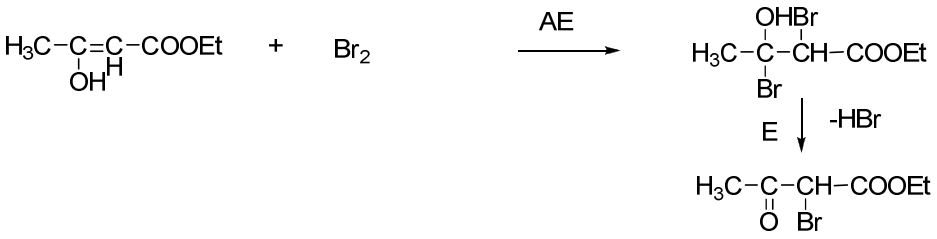


2 puncte

2 puncte

2 puncte

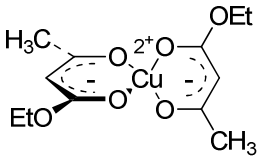
2 puncte



4 puncte

(ecuatia 1,5 puncte + tipul mecanismului 0,5 puncte)

c. una dintre structurile de mai jos **2 puncte**



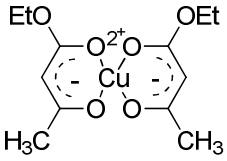
structura pentru coordinare tetraedrica

structuri pentru coordinare plan-patrata

d. **2 puncte**

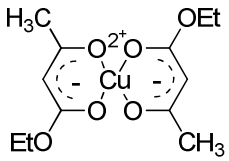
combinatia complexa de la punctul c care corespunde coordinarii tetraedrice poate prezenta izomerie optica (asemanator cu cea observata la spirani, bifenili sau alene)

e. **6 puncte**



cis

3 puncte



trans

3 puncte