



ОТРАСЛЕВАЯ  
ОЛИМПИАДА  
ШКОЛЬНИКОВ

$$(ab)c = a(bc)$$

$$E=mc^2$$



ШИФР

106092

0 1 2 3 4 5 6 7 8 9

Бланк олимпиадной работы

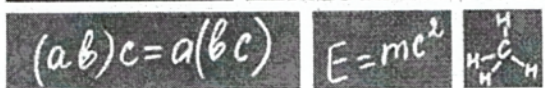
Класс 10 Вариант 5 Дата Олимпиады 19.02.2023

Площадка написания Российский государственный университет  
нефтегазовых дел (НИУ) имени  
И.М. Губкина

ОЦЕНКА

(заполняется проверяющим)

| Задача | 1  | 2  | 3  | 4  | 5  | 6  | 7 | 8  | 9 | 10 | $\Sigma$ |                              | Подпись            |
|--------|----|----|----|----|----|----|---|----|---|----|----------|------------------------------|--------------------|
|        |    |    |    |    |    |    |   |    |   |    | Цифрой   | Прописью                     |                    |
| Оценка | 10 | 16 | 10 | 16 | 14 | 12 | — | 16 |   |    | 94       | Десятисто<br>четыре<br>балла | <i>В.И. Губкин</i> |



Бланк олимпиадной работы

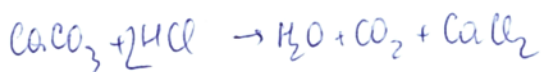
1) Дано:

$$m(\text{угл}) = 300 \text{ г}$$

$$\omega(\text{CaCO}_3) = 0,8$$

$$V(\text{CO}_2) = ?$$

Решение:

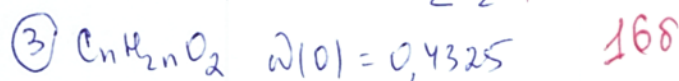
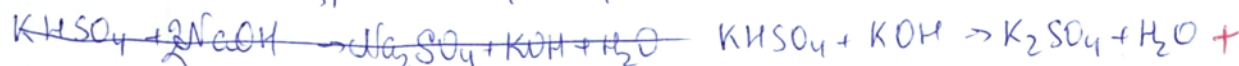


$$m(\text{CaCO}_3) = 300 \cdot 0,8 = 240 \text{ г}$$

$$n(\text{CaCO}_3) = \frac{240}{100} = 2,4 \text{ моль} \Rightarrow n(\text{CO}_2) = 2,4 \text{ моль}$$

$$V(\text{CO}_2) = 2,4 \cdot 22,4 = 53,76 \text{ л}$$

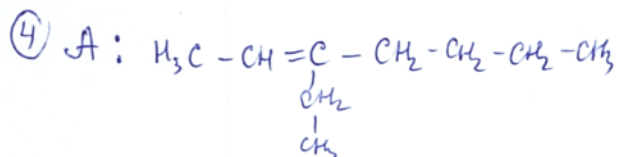
Ответ:  $V(\text{CO}_2) = 53,76 \text{ л}$  **10**



$$\frac{32}{12n + 2n + 32} = 0,4325$$

$\Rightarrow \frac{32}{14n + 32} = 0,4325 \Rightarrow n = 3 \rightarrow \text{C}_3\text{H}_6\text{O}_2 \quad \text{H}_3\text{C}-\text{CH}_2-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{OH}$

Ответ:  $\text{C}_3\text{H}_6\text{O}_2$  (пропановая к-та) **125**

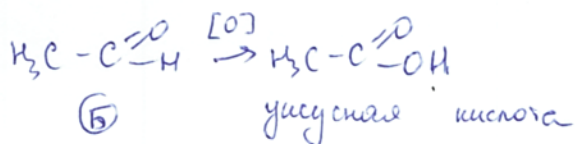
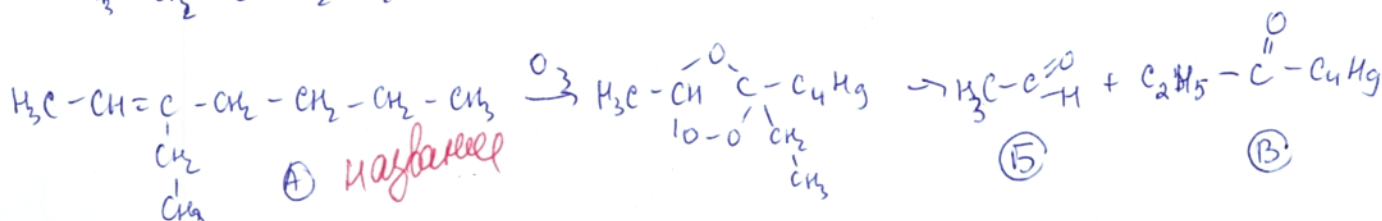
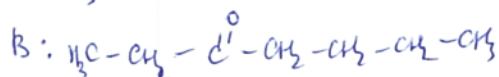
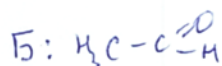


\*  $M(\text{кислота}) = 102$

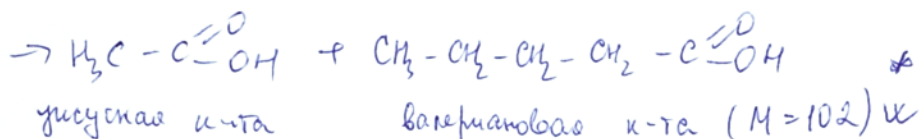
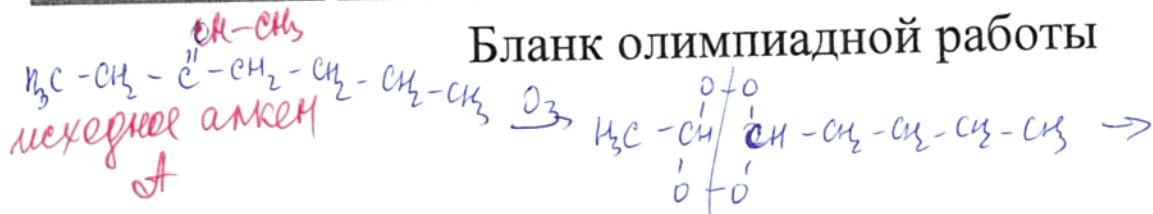
$12n + 2n + 32 = 102$

$14n = 70$

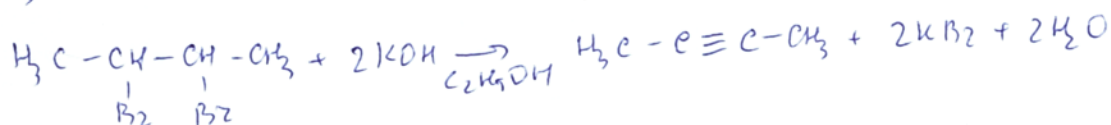
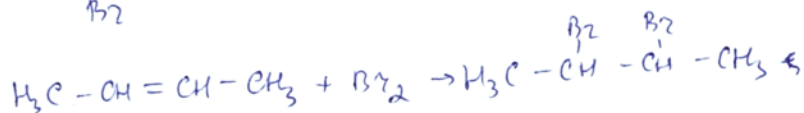
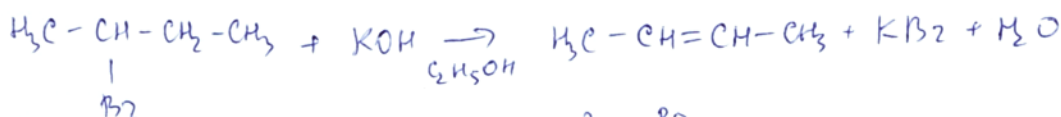
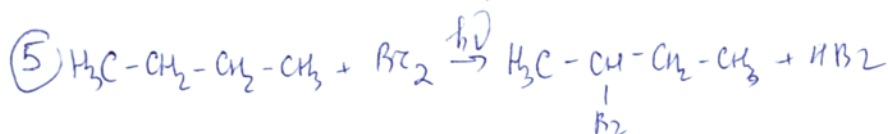
$n = 5 \Rightarrow \text{валериановая к-та}$



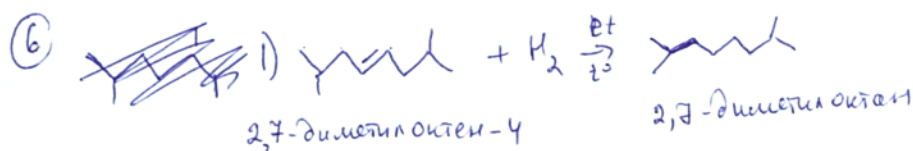
Бланк олимпиадной работы



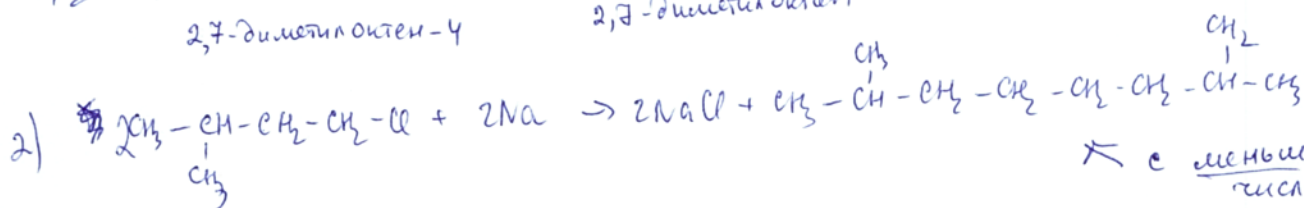
160



140

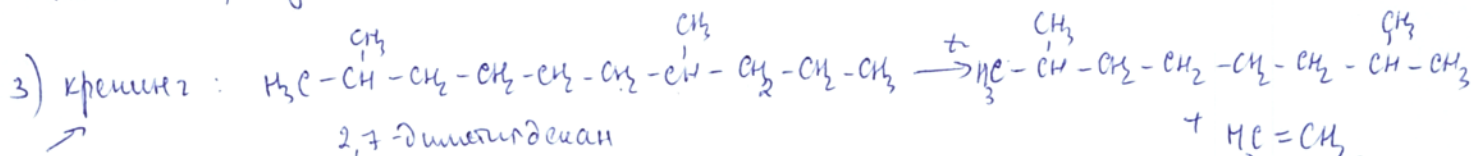


← с тем же числом атомов C

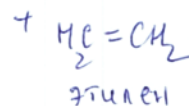


→ с меньш. числом атомов C

3-метил-1-хлор-бутан

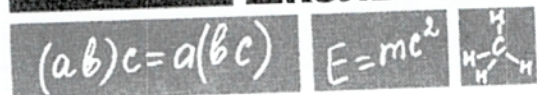


2,7-диметилдесан



с большим числом атомов C

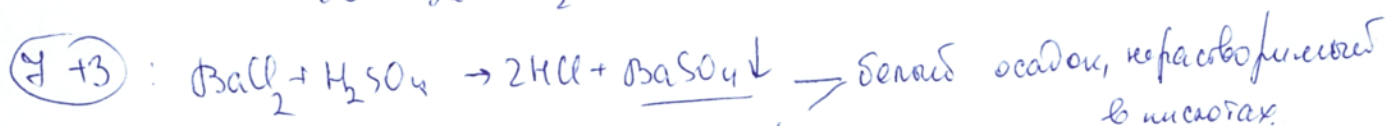
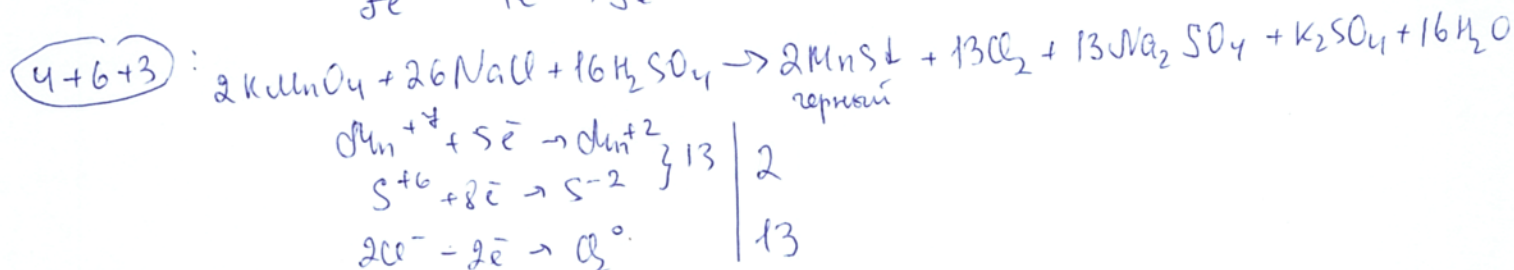
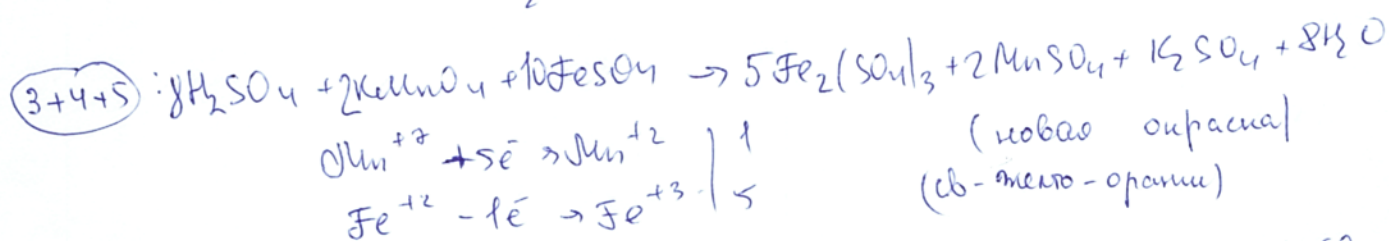
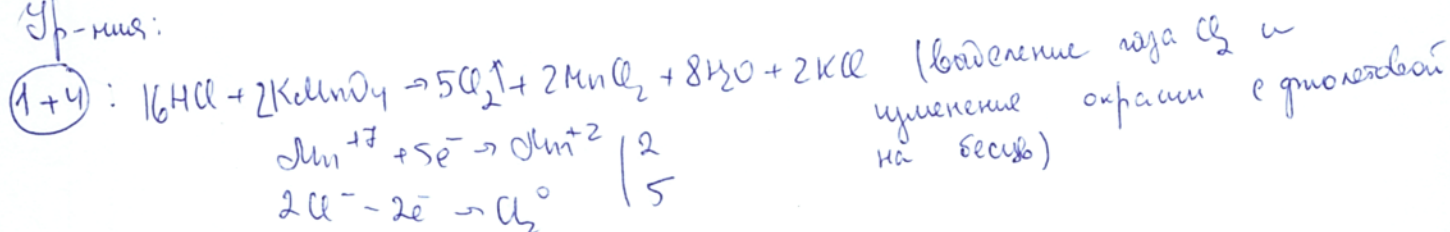
120



Бланк олимпиадной работы

- 8) 1) HCl  
2) HNO<sub>3</sub>  
3) H<sub>2</sub>SO<sub>4</sub>  
4) KMnO<sub>4</sub>  
5) FeSO<sub>4</sub>  
6) NaCl  
7) BaCl<sub>2</sub>

Ур-ния:



16