2022 年秋季学期有机化学 B 第一次小测答案

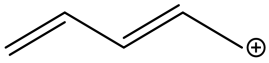
学号_____　　姓名_____

一、填空题（每个 2 分，共 30 分）

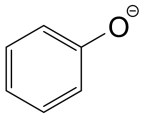
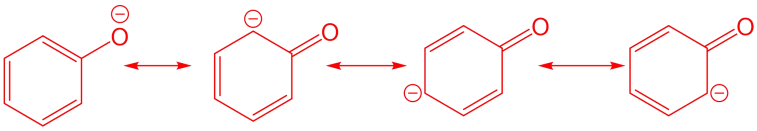
1.写出下列结构可能的共振式（6 分）

①CH_2N_2 _____

②

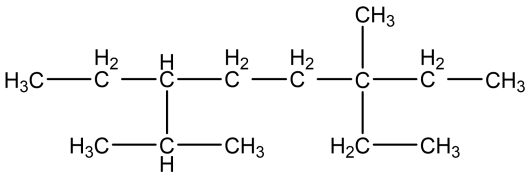
 ___ ___

③

 _____  ___

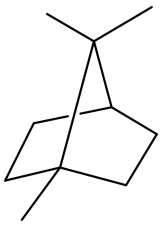
2.命名下列化合物或写出下列化合物的结构式（10 分）

①



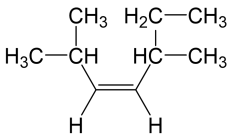
__2,6-二甲基-3,6-二乙基辛烷_

②



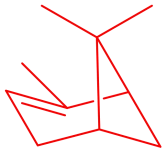
_____1,7,7-三甲基二环[2.2.1]庚烷_____

③



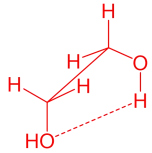
_____(Z)-2,5-二甲基-3-庚烯_____

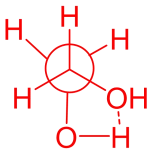
④二螺[3.0.3.1]壬烷 _____ _____

⑤2,6,6-三甲基二环[3.1.1]-2-庚烯 ____  _____

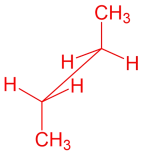
3.分别用锯架式和纽曼投影式表示下列化合物的最稳定构象（4 分）

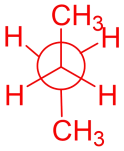
①1,2-乙二醇





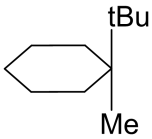
②正丁烷

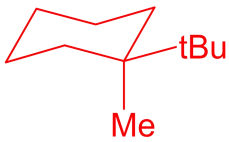




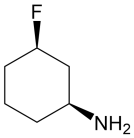
4.画出下列化合物的优势构象（10 分）

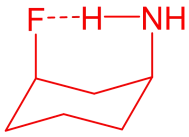
①



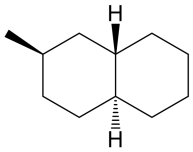


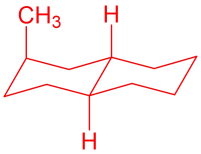
②



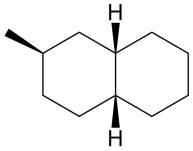


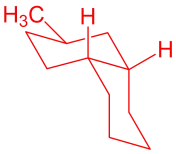
③



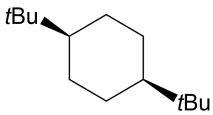


④



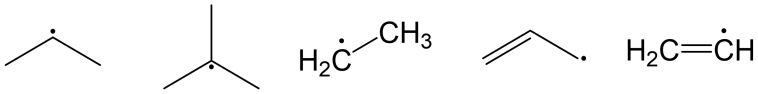


⑤



二、单项选择题（每个 2 分，共 26 分）

1.下列自由基的稳定性排序，正确的是（B）

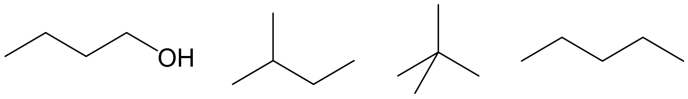


(1) (2) (3) (4) (5)

A.(5)>(4)>(2)>(1)>(3) B.(4)>(2)>(1)>(3)>(5)

C.(4)>(5)>(3)>(1)>(2) D.(4)>(5)>(2)>(1)>(3)

2.下列化合物的沸点排序，正确的是（A）



(1) (2) (3) (4)

A.(1)>(4)>(2)>(3) B.(3)>(1)>(2)>(4)

C.(1)>(3)>(2)>(4) D.(4)>(1)>(2)>(3)

3.下列化合物中，不能使高锰酸钾褪色的是（B）

A. B. C. D.

4.下列环烷烃中单位 CH_2 燃烧热绝对值最小的是（C）

A. B. C. D.

5.下列哪一条不是原子轨道组合成分子轨道的必备规则（A）

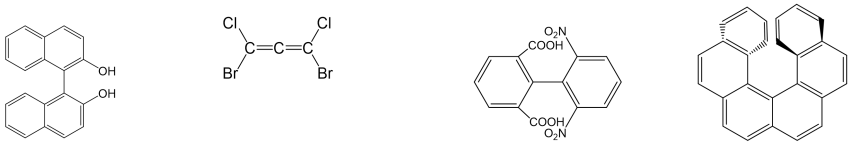
A.能量最低 B.对称性匹配 C.能量相近 D.电子云最大重叠

6.C_7H_{16} 有（C）个构造异构体（不考虑光学异构体）

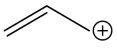
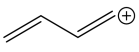
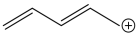
A.7 B.8 C.9 D.10

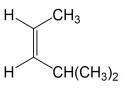
7.下列化合物中没有手性的是（C）

A. B. C. D.



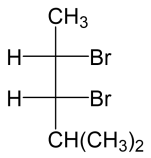
8.下列碳正离子中最稳定的是（D）

A. B.  C.  D. 

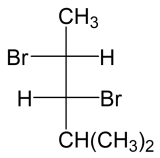
9.化合物 

与 Br_2 发生加成反应的主要产物为（B）

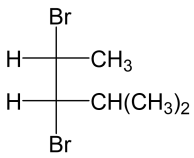
A. B. C. D.



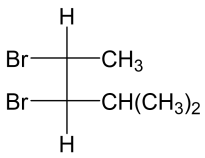
(±)



(±)



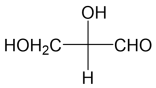
(±)



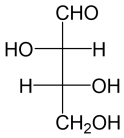
(±)

10.下列化合物中属于 L 型的是（C）

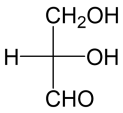
A.



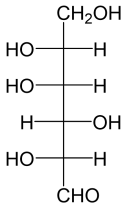
B.



C.

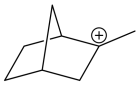


D.

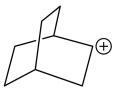


11.下列碳正离子中最稳定的是（A）

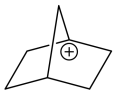
A.



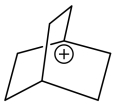
B.



C.



D.



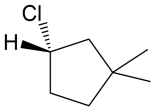
12.下列烷烃进行氯代反应，只生成 3 种一氯代物的是（D）

A.$(CH_3)_2CHCH_2CH_2CH_3$　　B.$(CH_3CH_2)_2CHCH_3$

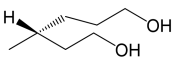
C.$(CH_3)_2CHCH(CH_3)_2$　　D.$(CH_3)_3CCH_2CH_3$

13.判断下列化合物中，哪一个是 R 构型的（B）

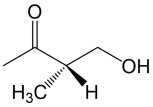
A.



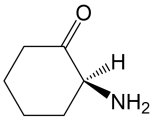
B.



C.



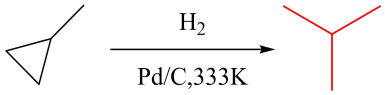
D.



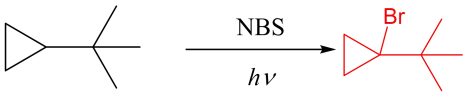
三、完成反应（每个 2 分，共 24 分）

1.

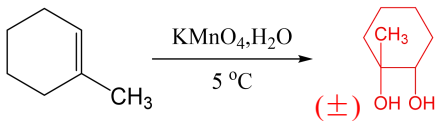
2.



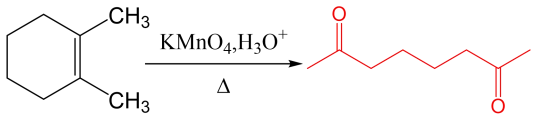
3.



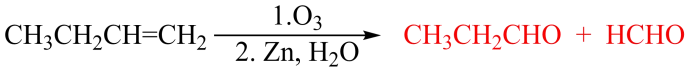
4.（产物用构象式表示）



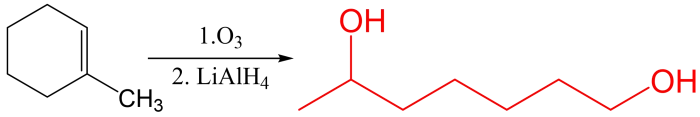
5.



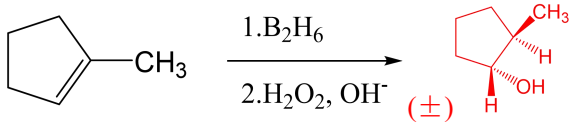
6.



7.



8.（须写出立体构型）



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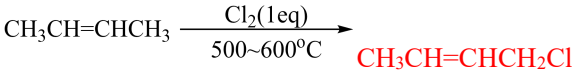
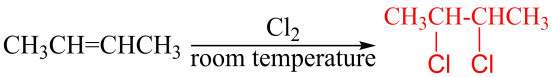
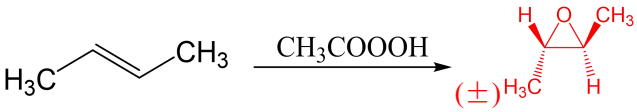


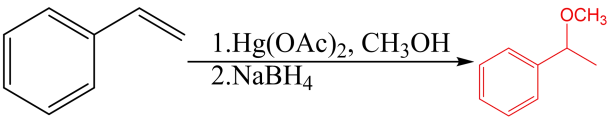
10.



11.（须写出立体构型）

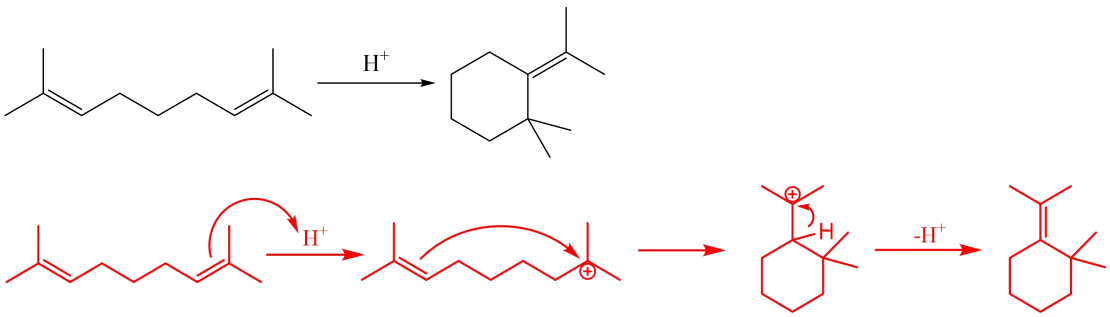


12.

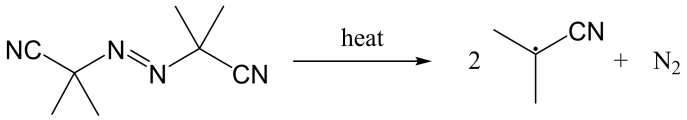


四、机理题（每个 5 分，共 10 分）

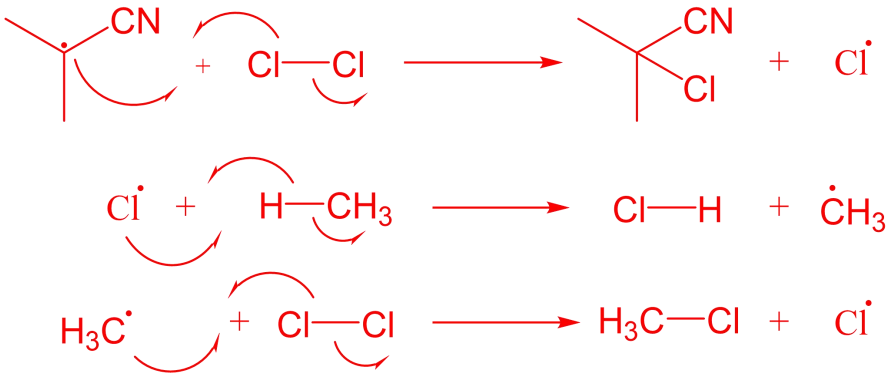
1.



2.已知某自由基引发剂在受热条件下会发生如下反应：

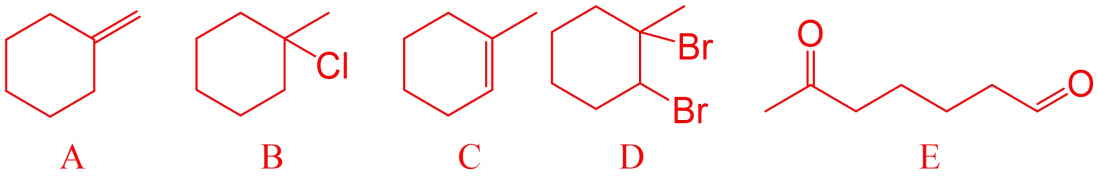


试写出甲烷在该自由基引发剂参与下的一氯代反应机理（链终止反应可不写）。



五、推断题（10 分）

化合物 A 的分子式为 C_7H_{12}，在高锰酸钾水溶液中回流加热，得到的有机产物只有 ；A 与 HCl 作用得到 B，B 再与 EtONa-EtOH 作用，脱去一分子 HCl 后得到 A 的同分异构体 C。C 能使 Br_2 的 CCl_4 溶液褪色，并得到 D。若将 C 与 O_3 反应后再用 Zn 和 H_2O 处理，便得到 E。请写出 A~E 的结构式，并写出以上反应的反应式。



反应式略