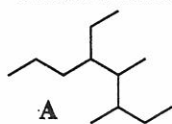


※請將選擇題作答於試卷內之「選擇題作答區」。

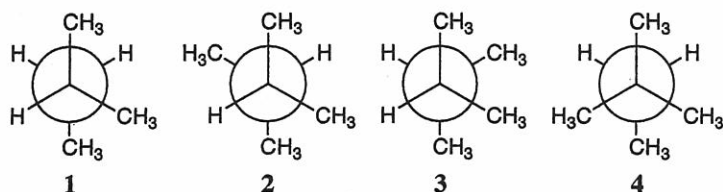
單選題 (75%)

1. What is a correct name for compound A?



- (A) 3-propyl-4,5-dimethylheptane  
(B) 2,4-diethyl-3-methylheptane  
(C) 3-ethyl-2-sec-butylhexane  
(D) 5-ethyl-3,4-dimethyloctane

2. Which of the following Newman projections represents the most stable conformation of 2,3-dimethylbutane?

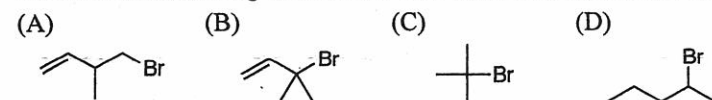


(A) 1 (B) 2 (C) 3 (D) 4

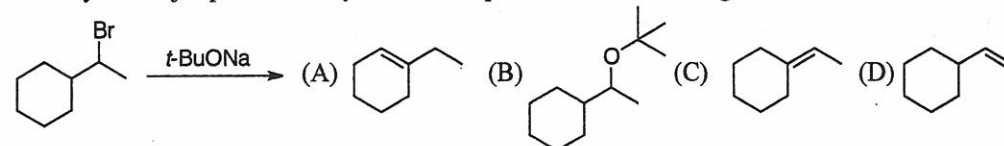
3. Substitution of which of the following groups on a cyclohexane would result in the greatest amount of steric strain?

- (A) bromo (B) isopropyl (C) n-propyl (D) n-butyl

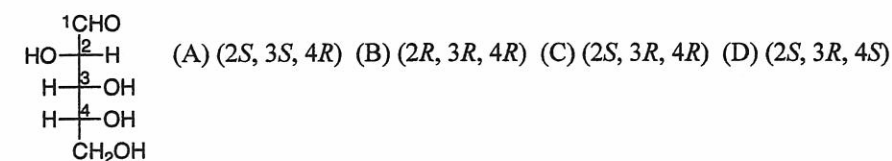
4. Which of the following would react with water at the fastest rate under  $S_N1$  reaction conditions?



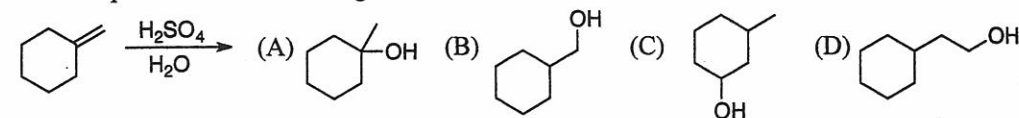
5. Identify the major product that you would expect from the following reaction.



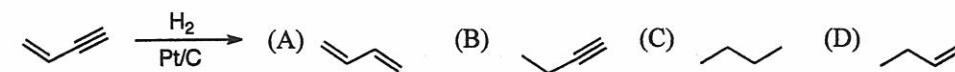
6. Which is the correct assignment for the following compound?



7. Give the product of the following reaction.

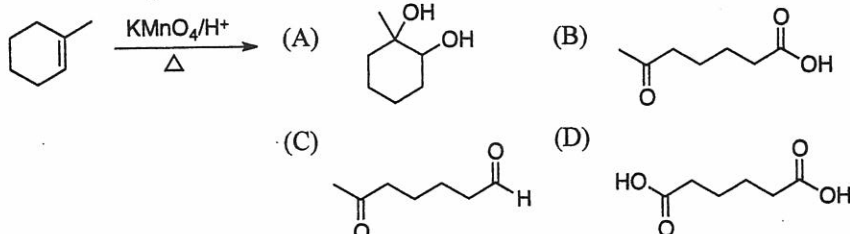


8. Give the product of the following reaction.

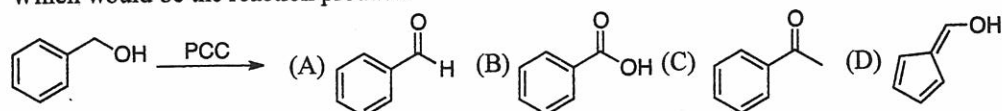


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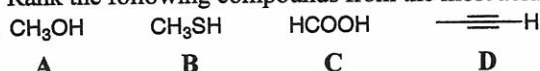
9. Which is the product of the following reaction?



10. Which would be the reaction product?



11. Rank the following compounds from the most acidic to the least acidic.

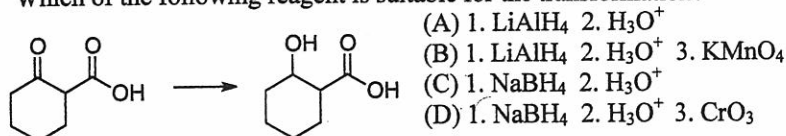


- (A)  $\text{B} > \text{C} > \text{D} > \text{A}$  (B)  $\text{C} > \text{B} > \text{A} > \text{D}$  (C)  $\text{D} > \text{B} > \text{C} > \text{A}$  (D)  $\text{C} > \text{A} > \text{B} > \text{D}$

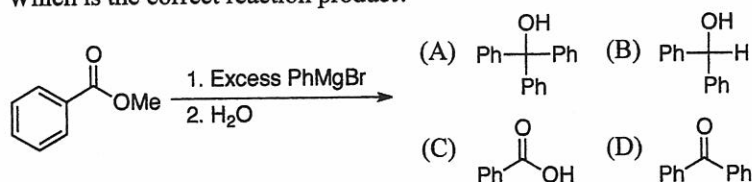
12. A compound with the molecular formula  $\text{C}_5\text{H}_{12}\text{O}$  produces only two singlets in the  $^1\text{H}$  NMR spectrum. What is the structure of this compound?

- (A)  $(\text{CH}_3)_3\text{C-O-CH}_3$  (B)  $(\text{CH}_3\text{CH}_2)_2\text{CHOH}$  (C)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$  (D)  $(\text{CH}_3)_3\text{CCH}_2\text{OH}$

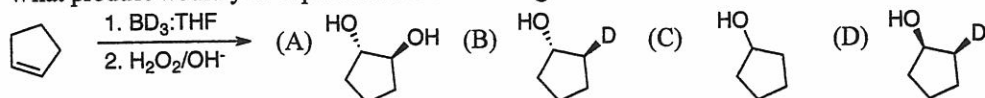
13. Which of the following reagent is suitable for the transformation?



14. Which is the correct reaction product?



15. What product would you expect from the following reaction?



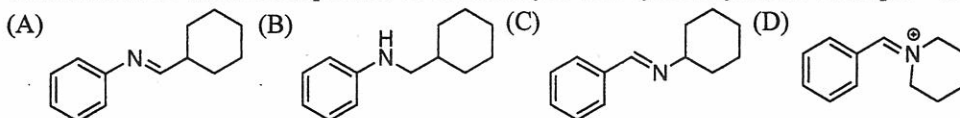
16. Which of the following is produced by the reaction of  $(\text{CH}_3\text{CH}_2)_2\text{S}$  with  $\text{CH}_3\text{CH}_2\text{I}$ ?

- (A)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{I}$  (B)  $(\text{CH}_3\text{CH}_2)_3\text{S}^+ \text{I}^-$  (C)  $(\text{CH}_3\text{CH}_2)_3\text{S}$  (D)  $\text{CH}_3\text{SCH}_2\text{CH}_2\text{CH}_3$

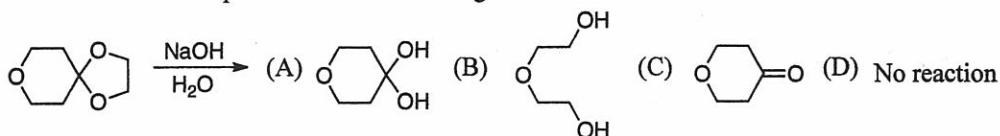
17. Which of the following sets of substituents are all deactivating groups in the electrophilic aromatic substitution reactions?

- (A)  $\text{Cl}$ ,  $\text{CN}$ ,  $\text{NO}_2$  (B)  $\text{Cl}$ ,  $\text{NH}_2$ ,  $\text{CH}_3$  (C)  $\text{CH}_3$ ,  $\text{OCH}_3$ ,  $\text{COCH}_3$  (D)  $\text{CH}_3$ ,  $\text{NH}_2$ ,  $\text{OCH}_3$

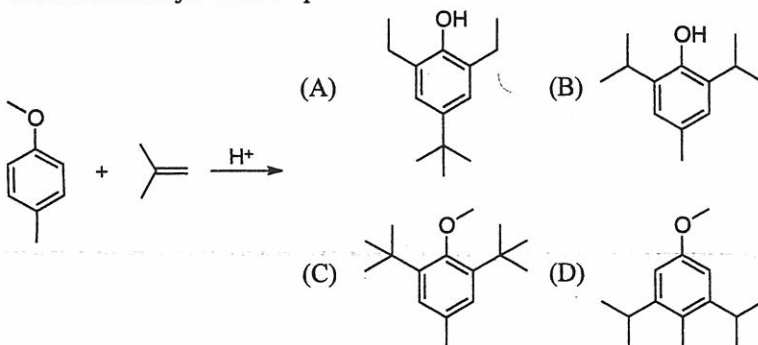
18. Which would be the reaction product of benzaldehyde with cyclohexylamine under pH= 4.5?



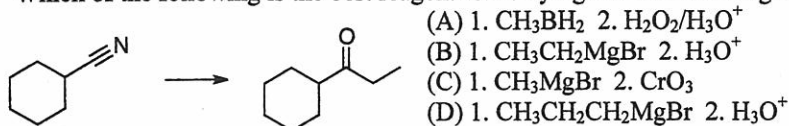
19. What is the reaction product for the following reaction?



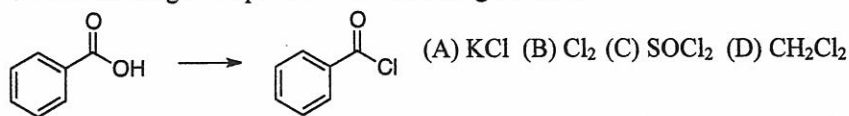
20. Which is the major reaction product?



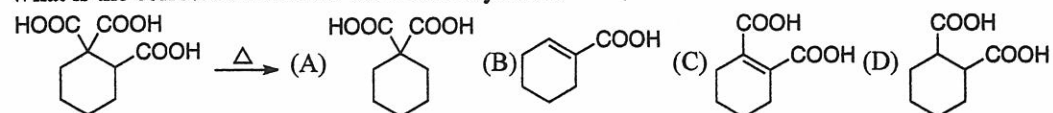
21. Which of the following is the best reagent for carrying out the following conversion?



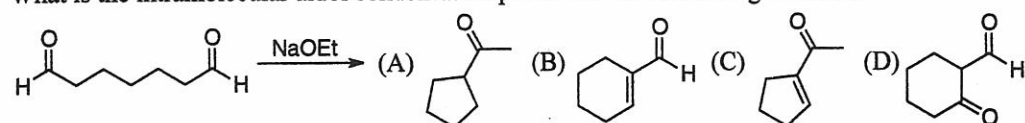
22. What is the reagent required for the following reaction?



23. What is the correct structure for the decarboxylation?

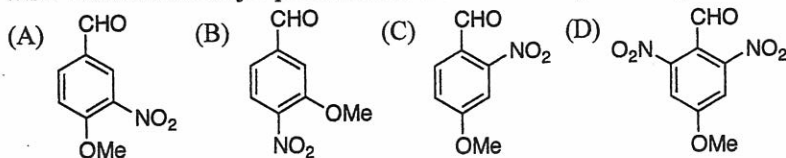


24. What is the intramolecular aldol condensation product for the following reaction?



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25. What would be the major product from the nitration of *p*-methoxybenzaldehyde?



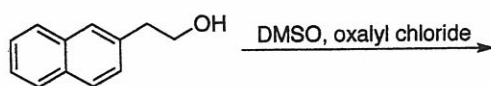
※ 本大題請於試卷內之「非選擇題作答區」標明題號依序作答。

問答題 (25%)

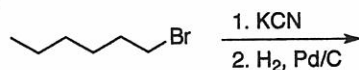
1. Please draw the structures (line-angle structures) of the following compounds. (9%)  
(a) ethynylbenzene (b) *N*-butylacetamide (c) (3*Z*,6*E*)-1,3,6-octatriene

2. Give the major product for each of the following reactions. (16%)

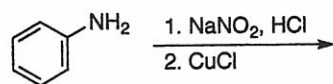
(a)



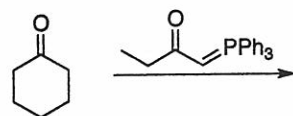
(b)



(c)



(d)



試題隨卷繳回