

嘉南藥理科技大學九十一學年度碩士班考試入學招生委員會

有機化學 試題(生物科技研究所：一般生甲組)

本試題共一張二面

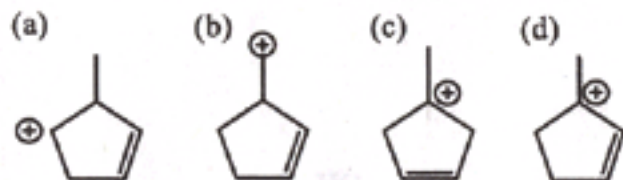
考生姓名： \_\_\_\_\_

注意事項： 請務必確實填寫姓名及准考證號碼

准考證號碼： \_\_\_\_\_

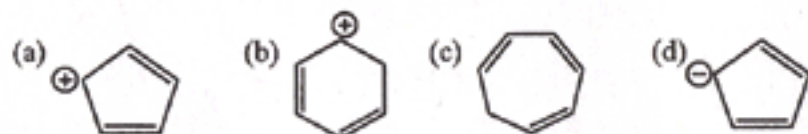
一、Simple choice. There is only one correct answer in each question. 20%

1. Which structure would be the most stable



2. What shape does the  $[BH_4]^-$  have? (a) trigonal planar (b) tetrahedral (c) linear (d) octahedral

3. Which of the following compounds are aromatic



4. Which is the strongest acid (a)  $CH_2FCH_2CH_2COOH$  (b)  $CH_3CHFCH_2COOH$  (c)  $CH_3CH_2CHFCH_2COOH$  (d)  $CH_3CH_2CH_2COOH$

5. Which compound has the highest boiling point (a)  $CH_3CH_2COOH$  (b)  $CH_3CH_2CH_2OH$  (c)  $CH_3CH_2OCH_3$  (d)  $CH_3COOCH_3$

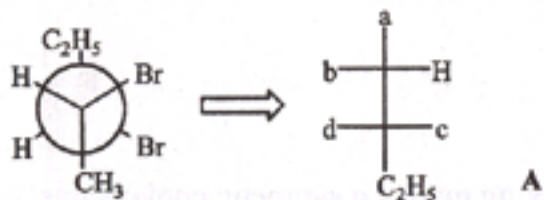
6. Which compound has the largest bond angle (a)  $H_2O$  (b)  $NH_3$  (c)  $CH_4$  (d)  $BeH_2$

7. Which bond is  $SP^3 - SP^2$  (a)  $CH_3 - CH_2CH_3$  (b)  $CH_3 - CHO$  (c)  $CH_3 - CCH$  (d)  $CH_3 - CH(CH_3)_2$

8. Give the major mechanism by  $CH_3CH_2CH_2CH_2Br + ^-OCH_3 \longrightarrow$  (a)  $S_N1$  (b)  $S_N2$  (c) E1 (d) E2

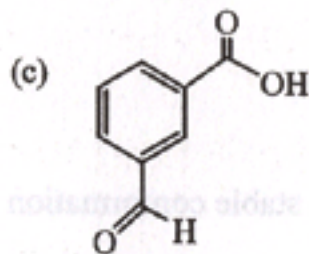
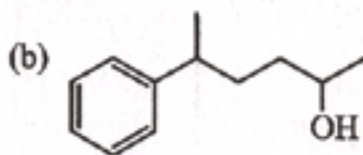
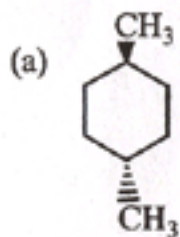
9. Which is the correct correlation for A compound

(a) a =  $CH_3$ , b = Br, c = Br (b) b =  $CH_3$ , c = H, d = Br (c) a =  $CH_3$ , c = H, d = Br (d) b =  $CH_3$ , a = Br, d = Br



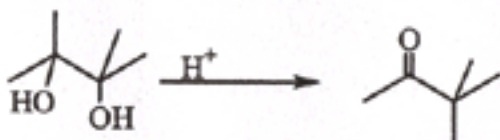
10. What is the specific configuration of compound A (a) (2R, 3S) (b) (2R, 3R) (c) (2S, 3R) (d) (2S, 3S)

二、 Give the IUPAC name for the following structures 6%

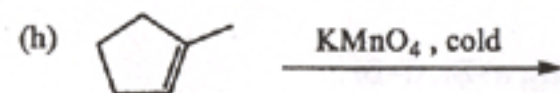
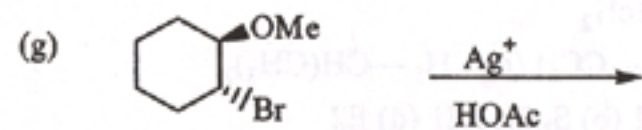
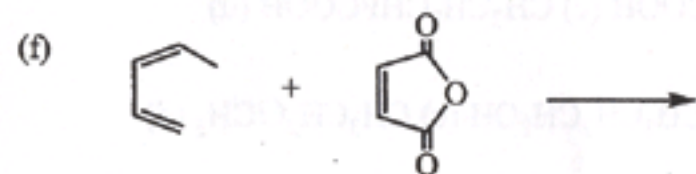
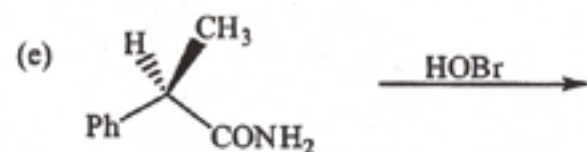
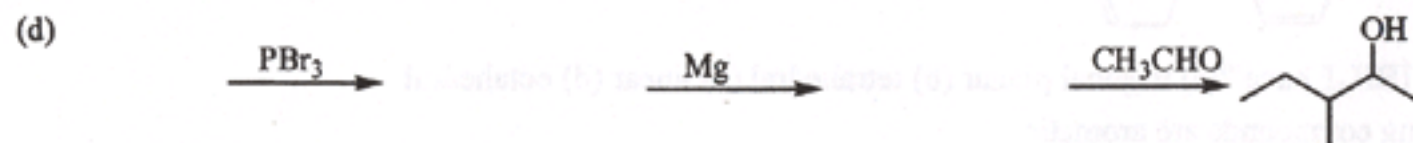
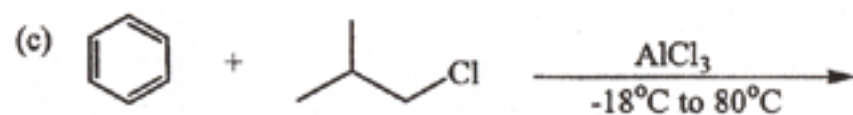
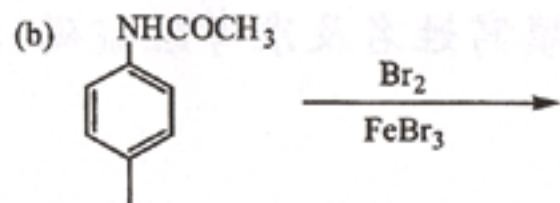
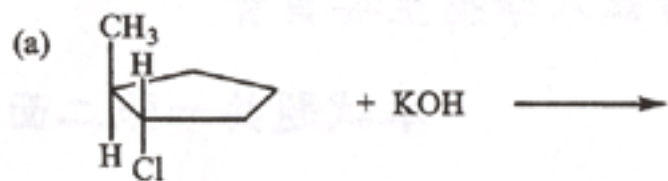


三、 What is the structure of the following compounds (a) 9-BBN (b) TsCl (c) Bicyclo[3,2,1]octane 6%

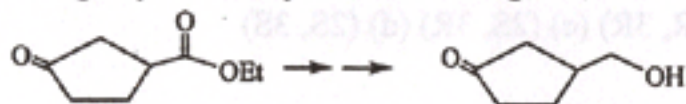
四、 Propose a mechanism to account for these reactions 10%



五、Give the compound (stereochemical formula) would you expect from each reactions 33%



六、Using any necessary additional reagents, show how to accomplish the following multistep synthetic conversions 10%



七、Write and explain the most stable conformation of the tert-Butylcyclohexane 5%

八、Propose a structure that is consistent with each set of data. 10%

(a)  $C_4H_8O_3$   $^1H$ -NMR : triplet  $\delta$  1.27 (3H) ; quartet  $\delta$  3.66 (2H) ; singlet  $\delta$  4.13(2H) ; singlet  $\delta$  10.95(1H)  
IR : 2500 ~ 3000  $cm^{-1}$  (broad) , 1715  $cm^{-1}$  strong peak

(b)  $C_5H_{10}O$   $^1H$ -NMR : doublet  $\delta$  1.10 (6H) ; singlet  $\delta$  2.10(3H) ; septet  $\delta$  2.50(1H)  
IR : 1720  $cm^{-1}$  strong peak

