

國立臺北科技大學

九十二學年度有機高分子研究所入學考試

有機化學試題

填 准 考 證 號 碼

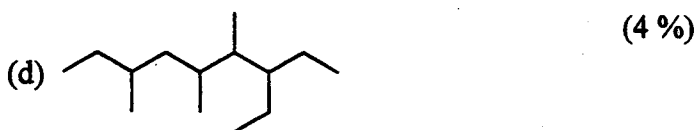
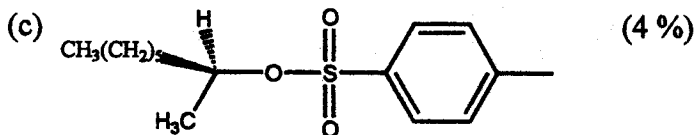
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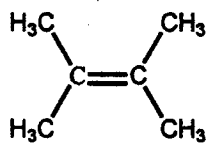
注意事項：

1. 本試題共【8】題，配分共100分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在答案卷之答案欄內，否則不予計分。

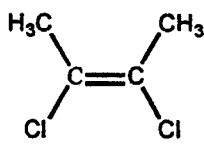
1. Write two reasonable Lewis structures corresponding to the formula C_2H_6O . Assume the molecule adheres to the octet rule; no atoms should have formal charges. (6 %)
2. Give the hybridization state of each carbon in the following compounds:
 - (a) Propene ($CH_3CH=CH_2$) (4 %)
 - (b) Carbon dioxide ($O=C=O$) (4 %)
3. Write structural formulas for each of the following compounds:
 - (a) 2,6-Dichloro-4-methyl-4-octanol (4 %)
 - (b) *trans*-1,4-Dimethylcyclohexane (4 %)
 - (c) (*E*)-1-Phenyl-1-butene (4 %)
 - (d) 4-Octyne (4 %)
4. Give an acceptable IUPAC name for each of the following compounds
 - (a) $CH_3(CH_2)_6CO_2H$ (4 %)
 - (b) $C_6H_5CH_2CH_2NH_2$ (4 %)



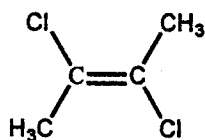
5. Which one of the following has the largest dipole moment? (4 %)



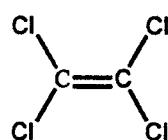
A



B

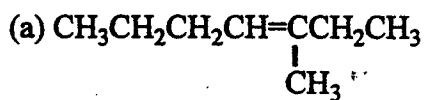


C



D

6. What combinations of carbonyl compound and ylide could you use to prepare of the following alkenes? Please draw the possible mechanism. (各 10 %)



7. Write equations showing how 2-phenylethanol ($\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{OH}$) could be prepared from each of the following starting materials: (各 5 %)

(a) Bromobenzene (b) Styrene (c) 2-phenylethanoic acid ($\text{C}_6\text{H}_5\text{CH}_2\text{CO}_2\text{H}$)

8. A compound ($\text{C}_8\text{H}_{10}\text{O}$) has the infrared (Fig. a) and 200-MHz ^1H NMR (Fig. b) spectra presented. What is its structure? (15 %)

