

國立勤益科技大學 101 學年度研究所碩士班招生筆試試題卷

所別：化工與材料工程系

組別：材料科技組

科目：有機化學

准考證號碼： (考生自填)

考生注意事項：

一、考試時間 100 分鐘。

試題一：Choose the right answers. 〈每題 4 分，共計 52 分。〉

() 1. Which of the following elements has the highest electronegativity?

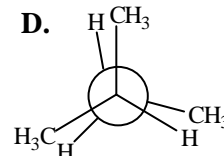
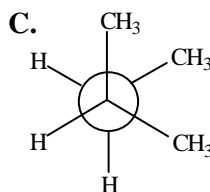
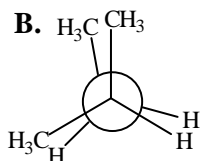
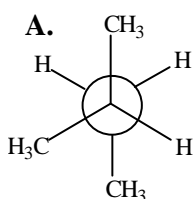
- (a) C (b) N (c) Cl (d) O

() 2. Rank the following compounds in order of increasing acidity:

(1) $\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$ (2) $\text{ClCH}_2\text{CO}_2\text{H}$ (3) $\text{Cl}_2\text{CHCO}_2\text{H}$ (4) $\text{ClCH}_2\text{CH}_2\text{CO}_2\text{H}$

- (a) (1) > (2) > (3) > (4) (b) (4) > (3) > (2) > (1) (c) (3) > (2) > (4) > (1)
(d) (2) > (4) > (3) > (1)

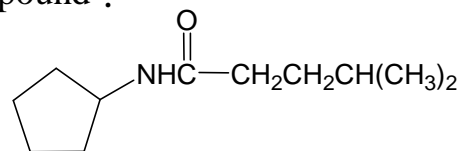
() 3. Which is the most stable one in the following Newman projections?



- (a) A (b) B (c) C (d) D

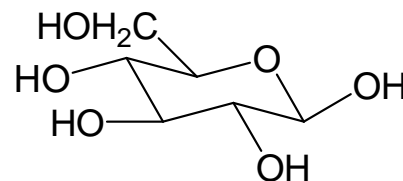
() 4. What is the IUPAC name of the following compound ?

- (a) N-cyclopentyl-4-methylpentanamide
(b) cyclopentyl-4-methylpentanamide
(c) cyclopentyl-3-methylbutanamide
(d) N-cyclopentyl-3-methylbutanamide



() 5. How many stereocenters are there in the glucose ?

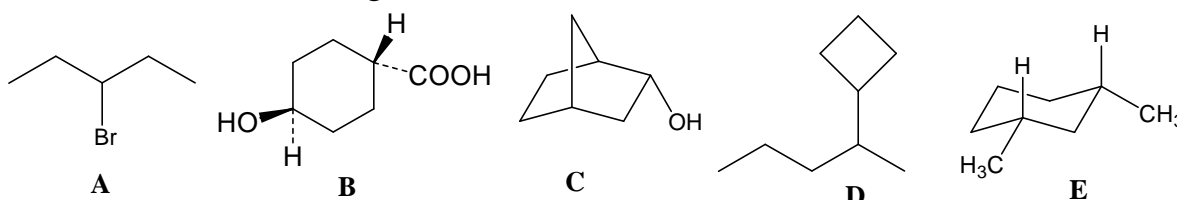
- (a) 3 (b) 4 (c) 5 (d) 6



() 6. Which of the following compounds are achiral ?

- (a) 1,3-dibromopentane (b) cis-1,4dimethylcyclohexane
(c) 3-methylhex-1-ene (d) 2-methylcyclohexanone

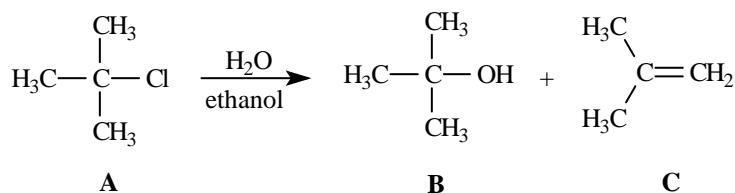
() 7. Which of the following molecules are chiral ?



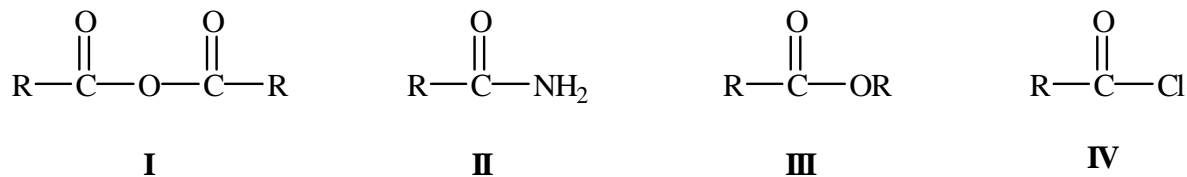
- (a) AE (b) BCE (c) BCD (d) CD

() 8. Consider the reaction below to answer the questions. Compound B is the:

- (a) S_N1 product (b) S_N2 product (c) E1 product (d) E2 product

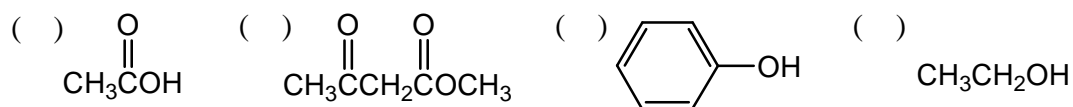


() 9. What is the order of decreasing reactivity towards nucleophilic acyl substitution for the carboxylic acid derivatives?



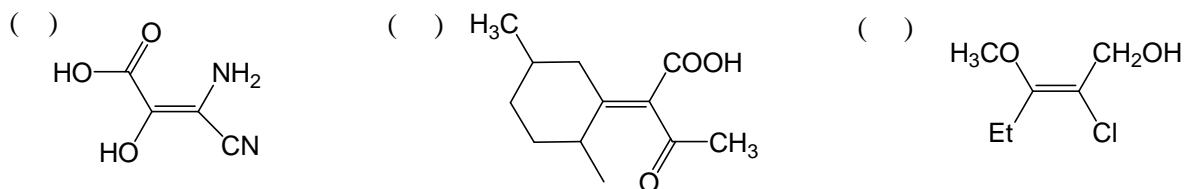
- (a) I > III > II > IV (b) II > III > I > IV (c) III > II > I > IV
(d) IV > I > III > II

() 10. Rank the following substances in order of increasing acidity :



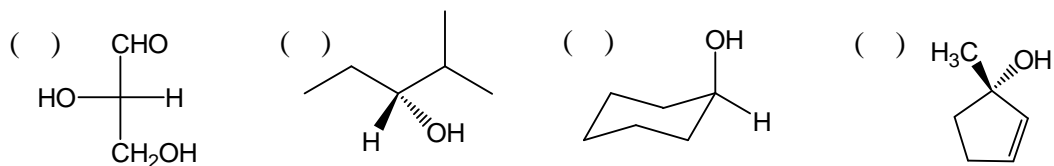
- (a) (IV) > (II) > (III) > (I) (b) (III) > (IV) > (II) > (I)
 (c) (II) > (I) > (III) > (IV) (d) (I) > (III) > (II) > (IV)

() 11. Assign E or Z configuration to the following alkenes :



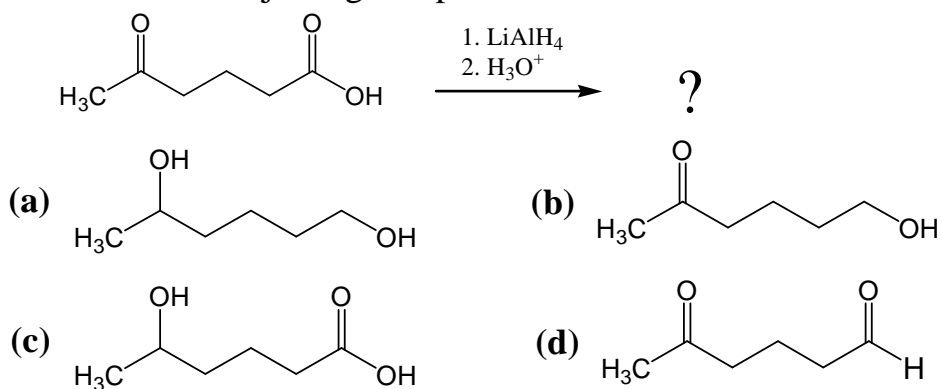
- (a) (I) E (II) Z (III) E (b) (I) Z (II) Z (III) Z
 (c) (I) E (II) E (III) E (d) (I) Z (II) E (III) Z

() 12. Which of the following stereo-centers is R-configuration ?

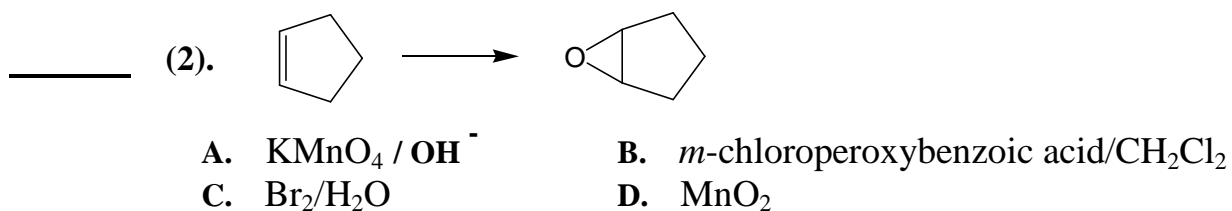
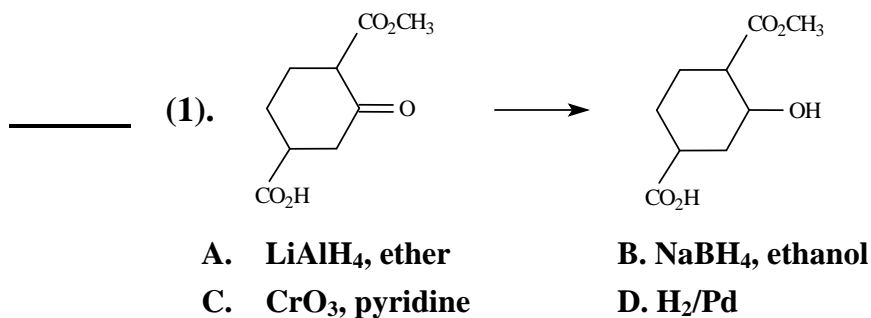


- (a) I (b) II (c) II, III (d) I, IV

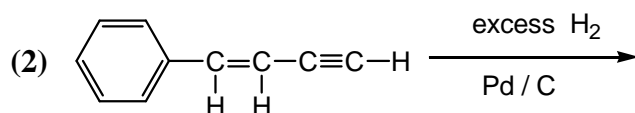
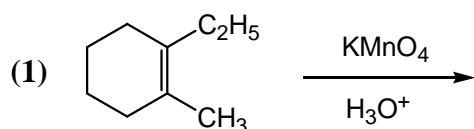
() 13. What is the major organic product obtained from the following reaction ?



試題二：Choose the **BEST** reagent for carrying out each of the following conversions. 〈每題 5 分，共計 10 分。〉

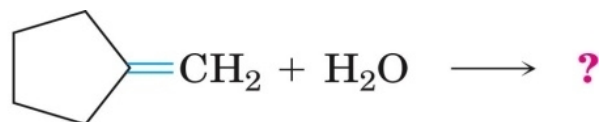


試題三：Give the major organic product(s) for each of the following reactions. Show all relevant stereochemistry. 〈每題 6 分，共計 12 分。〉



試題四：9分。

What product would you expect from the acid-catalyzed addition of water to methylene cyclopentane?



Methylenecyclopentane

試題五：9分。

What product(s) would you expect from bromination of aniline, C₆H₅NH₂?

試題六：8分。

How could you use the reaction of a Grignard reagent with an ester to prepare 1,1-diphenylpropan-1-ol?

國立勤益科技大學 101 學年度研究所碩士班招生筆試答案卷
 所別：化工與材料工程系 科目：有機化學

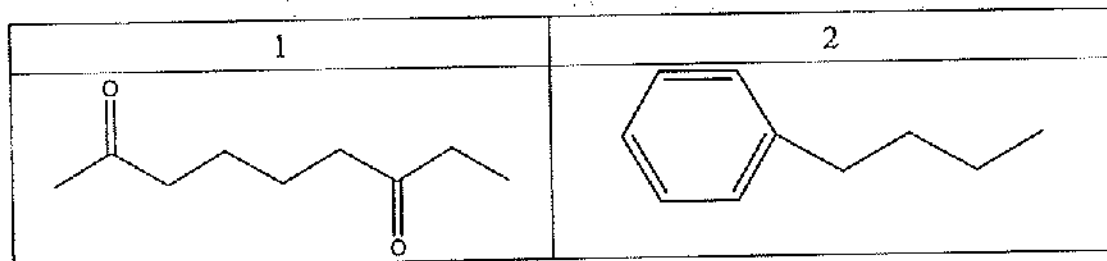
試題一：每題 4 分，共計 52 分。

1	2	3	4	5	6	7	8	9	10	11	12	13
d	c	a	a	c	b	d	a	d	d	c	b	a

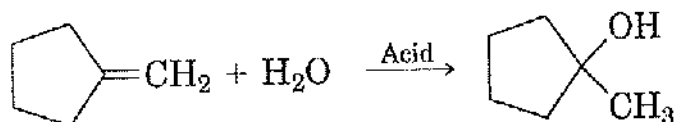
試題二：每題 5 分，共計 10 分。

1	2
b	b

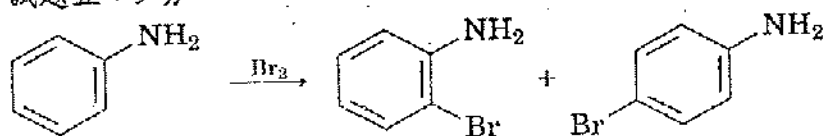
試題三：每題 6 分，共計 12 分。



試題四：9 分。



試題五：9 分。



Aniline

o-Bromoaniline

p-Bromoaniline

試題六：8 分。

