臺北醫學大學 100 學年度碩士班暨碩士在職專班招生入學考試

有機化學試題

本試題第1頁;共3頁

			(知1	自缺具或毀損,應立即請監試人負補 ————————————————————————————————————
注意事項	一、本試題共二大題,共 二、請將正確答案依題次 三、試題答錯者不倒扣;	計 100 分。 作答於答案用卷內。 題次號碼錯誤或不按順序或	鉛筆作答,不予計分。	
_	、選擇題(每題 3%,共 60%	⁄o)		
1.	When methanol (CH ₃ OH) ac	ts as a base, its conjugate acid	is	
	⊘ -CH ₂ OH	® CH₃O-	© CH ₄ OH	© CH ₃ OH ₂ ⁺
2.	Which of the following correctly ranks the cycloalkanes in order of increasing ring strain per methylene? © cyclopropane < cyclobutane < cyclopentane < cyclopropane © cyclohexane < cyclopentane < cyclopropane © cyclopentane < cyclopentane < cyclopropane © cyclopentane < cyclopropane < cyclobutane < cyclobutane			
3.				
	hydrogen atoms? (A) 3	B 4	© 5	(h) 6
1		_		© 6
4.	(2S,3S,4R)-2,3,4-trichlorohep (a) not isomers	uctural relationship between (2 tane? B constitutional isomers	© enantiomers	© diastereomers
5.	Which of the following conf	igurations corresponds to the s	tructure below?	
	\bigcirc (4R, 5R)	B (4R, 5S)	©(4S, 5R)	$\mathbb{O}(4S, 5S)$
6.	For which of the following as A H ₃ C CI CI CI	Ilkenes will cis- and trans- isom B H ₃ C CH ₃ CH CI	ners not exist? © H ₃ C H ₂ C—CH ₃ H CH ₃	© H ₃ C CH ₃
7.	1-Methylcyclopentan-1-ol is (a) a primary alcohol	classified as B a secondary alcohol	© a tertiary alcohol	① a phenol
8.	Which of the following term (A) carbocation	s best describes the reactive na ® free radical	ature of a Grignard reagent? © electrophile	nucleophile
9.	How many pairs of degenera $\textcircled{0}$ 0	ate π molecular orbitals are f	found in benzene?	() 3
10.	The following compound has been found effective in treating pain and inflammation. Which sequence correctly ranks each carbonyl group in order of increasing reactivity toward nucleophilic addition?			
	① H 0 ③ H 0 ③ H 0 ② H D D D D D D D D D D D D D D D D D D			
	(A) (1)<(2)<(3)	B 2<3<1	© 3<1<2	(1)
11.	Which compound would have CH2CH2CH2CH2CH3	we the highest boiling point? B CH3CH2OCH2CH2CH3	© CH3CH2CH2CH2CH2OH	© CH3CH2OCH(CH3)2
12.		omers are possible for the form		
	(A) 2	(B) 3	() 1	() 5

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- 13. Which of these is comparatively insignificant factor affecting the magnitude of specific optical rotation?
 - (A) concentration of the substance of interest
- B purity of the sample

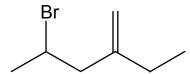
© temperature of the measurement

- (1) length of the sample tube
- 14. The correct IUPAC name for the following compound is:
 - (A) 2-Bromo-4-methylenehexane

B 2-(2-Bromopropyl)-1-butene

© 4-Bromo-2-ethyl-1-pentene

② 2-Bromo-4-ethyl-1-pentene



- 15. A compound with the molecular formula C₈H₉ClO gave the following ¹H NMR spectrum: triplet, δ 3.7; triplet, δ 4.2; multiplet, δ 7.1. There was no evidence of an -OH band in the IR spectrum. The most likely structure for the compound is:
 - ♠ C₆H₅OCH₂CH₂Cl
- ® C₆H₅OCHClCH₃
- © p-ClC₆H₄OCH₂CH₃
- O-ClC₆H₄OCH₂CH₃

- 16. Select the structure of C_6H_{14} with a base peak at m/z 43.
 - (A) CH3CH2CH2CH2CH3CH3
- ®(CH₃CH₂)₂CHCH₃
- ©(CH₃)₂CCH₂CH₃
- (CH3)2CHCH (CH3)2
- 17. Which of these, though commonly used, is an incorrect name for CH₃CHOHCH₃?
 - (A) Isopropyl alcohol
- ® sec-Propyl alcohol
- © 2-Propanol
- Isopropanol
- 18. When 3-methyl-2,3-pentanediol vapor is passed over hot alumina (Al₂O₃), the chief product to be expected is which of these?
 - (A) 2-Ethyl-1,3-butadiene
- 3-Methyl-1,3-pentadiene
- © 3-Methyl-1,2-pentadiene
- ① 3-Methyl-2,3-pentadiene

- 19. Compute the index of hydrogen deficiency for the molecule C10H8
 - (A) 7

B 6

© 5

- (D) 4
- 20. Which of the following statements is true when ethane, ethene and acetylene are compared with one another?
 - Acetylene is the weakest acid and has the longest C-H bond length
 - (B) Acetylene is the strongest acid and has the shortest C-H bond length
 - © Ethane is the strongest acid and has the longest C-H bond length
 - D Ethene is the strongest acid and has the shortest C-H bond length
- 二、反應題與問答題(每題4%,共40%)

2.

3.

5. O
$$CH_3$$
 1. LDA CH_3 2. phCH₂Br

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6. Draw a structural formula for the product of the acid-catalyzed of 1-methylcyclohexane.

7. Following are stereorepresentations of the three stereoisomers of 2,3-butanediol. Which are enantiomers?