

國立成功大學

112學年度碩士班招生考試試題

編 號： 77

系 所： 化學工程學系

科 目： 有機化學

日 期： 0206

節 次： 第 1 節

備 註： 不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

I. Selective questions (4 points each, total 20 points)

[1] Which of the following bonds gives rise to a strong, broad, absorbance at approximately 3200-3650 cm^{-1} in the infrared spectrum?

- (a) C=O ; (b) O-H ; (c) C=C ; (d) C-H

[2] Which of the following functional groups is likely to be present in a molecule that has peaks in the infrared spectrum at 3200-3650 cm^{-1} (strong), but does not have peaks at 1630-1820 or 1000-1250 cm^{-1}

- (a) alcohol ; (b) aldehyde or ketone ; (c) ether ; (d) ester

[3] What type of mechanism accounts for the cleavage of dibutyl ether upon treatment with HBr to give two moles of 1-bromobutane?

- (a) $\text{S}_{\text{N}}1$; (b) $\text{S}_{\text{N}}2$; (c) E1 ; (d) E2

[4] How many sets of equivalent protons are there in 3-methylhexane?

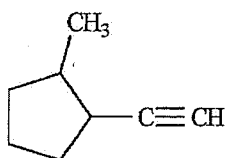
- (a) 3 ; (b) 5 ; (c) 7 ; (d) 9

[5] How many stereoisomers of 3-bromo-2-butanol exist?

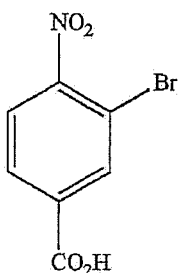
- (a) 2 ; (b) 4 ; (c) 6 ; (d) 8

II. Provide the proper IUPAC name for the compound below. (5 points each, total 30 points)

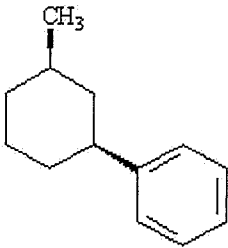
[1]



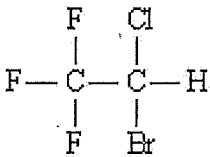
[2]



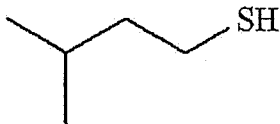
[3]



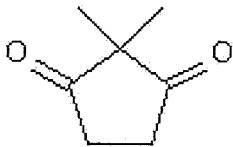
[4]



[5]

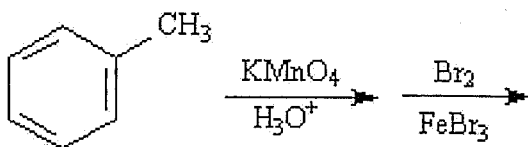


[6]

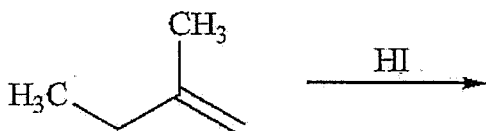


III. Draw the structure(s) (5 points each, total 45 points)

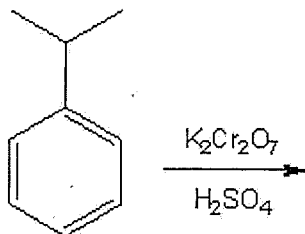
[1] Draw the structure of the major product in the following reaction.



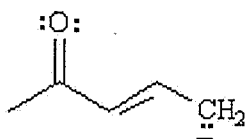
[2] Draw the structure of the major product in the following reaction.



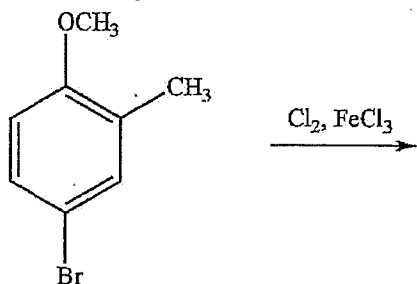
[3] Draw the structure of the major product in the following reaction:



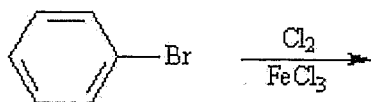
[4] Draw *two* resonance structures for the species below.



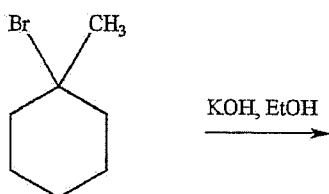
[5] McMurry 5-19 Draw the structure of the major product in the following reaction:



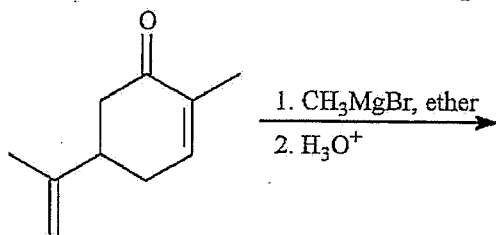
[6] Draw the structure of the possible products in the following reaction:



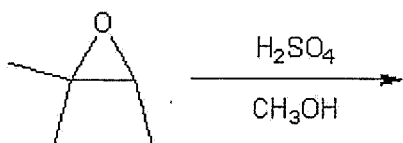
[7] Draw the structure of the possible products in the following reaction and indicate the major product.



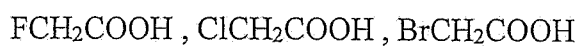
[8] Draw the structure of the major product in the following reaction:



[9] Brown 11-89. Draw the structure of the major product in the following reaction:



IV. Please rank the following acids in the order of decreasing acid strength (more acidic to less acidic)?



(5 points)