



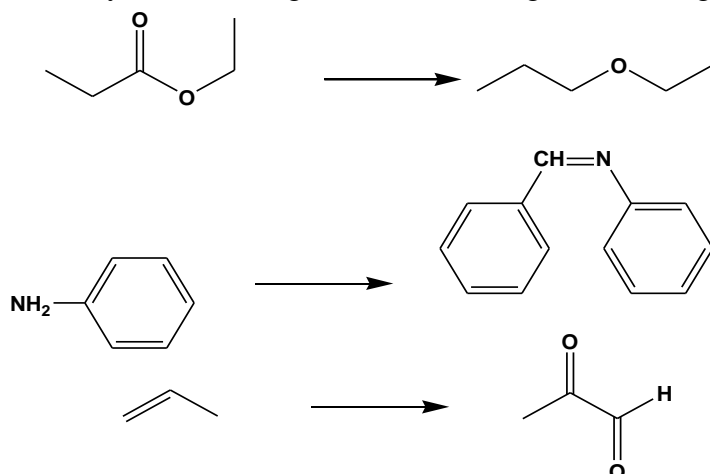
National Officers Academy
Final Mock Exams for CSS-2021
January 2021
CHEMISTRY, PAPER-II

TIME ALLOWED: THREE HOURS PART-I(MCQS): MAXIMUM 30 MINUTES	PART-I (MCQS) PART-II	MAXIMUM MARKS = 20 MAXIMUM MARKS = 80
NOTE: i. Part-II is to be attempted on the separate Answer Book . ii. Attempt ONLY FOUR questions from PART-II . ALL questions carry EQUAL marks. iii. All the parts (if any) of each Question must be attempted at one place instead of at different places. iv. Write Q. No. in the Answer Book in accordance with Q. No. in the Q. Paper. v. No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed. vi. Extra attempt of any question or any part of the question will not be considered. vii. Use of calculator is allowed.		

SUBJECTIVE PART — PART-II

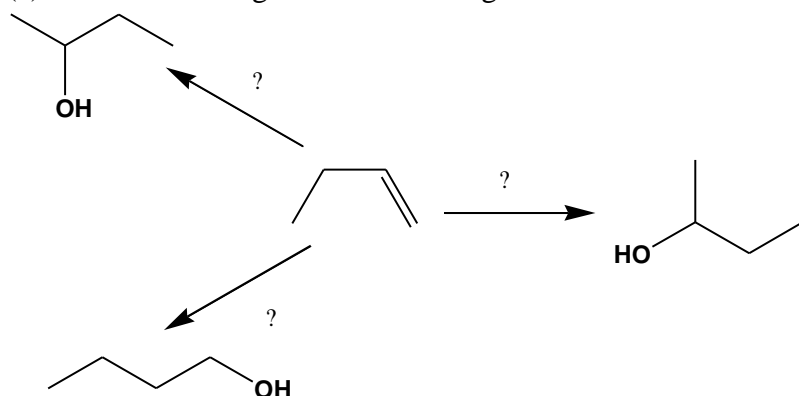
Q. 2. Write down short notes on the following. (20)
a) Polypeptides b) Hybridization c) Hyperconjugation d) Aromaticity e) Bathochromic shift

Q. 3. (a) Carry out following conversions using suitable reagents (12)



(b) What will be the Markonikov's product of reaction of 1-Propene with HBr? Justify with reagent and mechanism. (8)

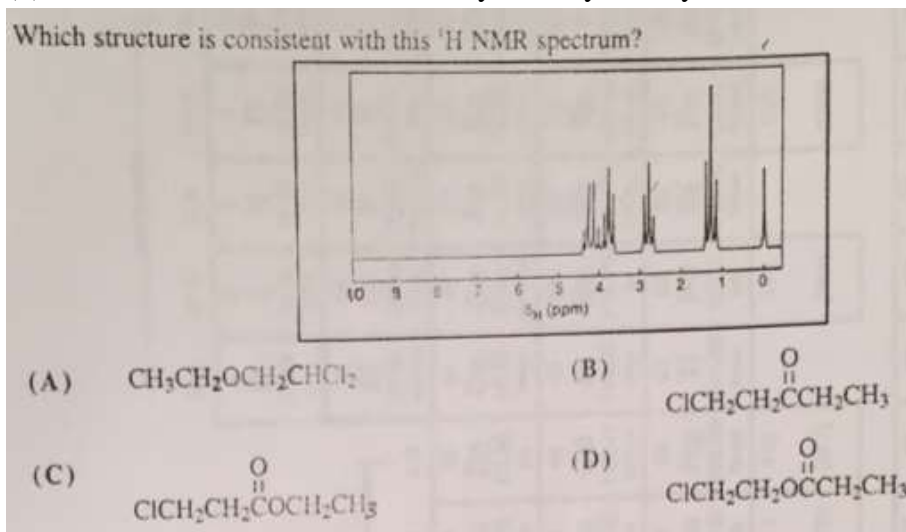
Q. 4. (a) Mention the reagents for following conversions (6)



(b) Discuss the acidic nature of phenol. (4)

(c) Write down esterification mechanism starting with Diazomethane. (10)

- Q.5. (a) What are the possible electronic transitions in the following compounds? (10)
 (b) Aniline, Benzoic acid, formaldehyde, Ethyl methyl ether, n-Hexane (10)



- Q. 6. (a) Altogether, the free radical chlorination of (S)-(-)-1-chloro-2-methylbutane gave six fractions of formula C₅H₁₀Cl₂. Four fractions were found to be optically active, and two fractions optically inactive. Draw structural formulas for the compounds making up each fraction. Account in detail for optical activity or inactivity in each case. (12)
 (b) Write a brief note on the resolution of racemic mixture. (8)
- Q. 7. (a) Under which conditions SN₂ is preferred over SN₁ and E₂? (10)
 (b) Addition of Nitro group to aniline leads to ortho-para or meta position? (5)
 (c) What is Huckel rule? Discuss its significance. (5)

Best of Luck for CSS-2021