UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Sixth Semester – Spring 2023

Roll No. .....

Paper: Organic Chemistry **Course Code: CHEM-317** **Time: 3 Hrs. Marks: 60**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions. (6x5=30)

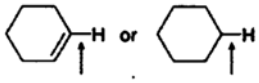
i. Draw the products of each reaction.

a.  $\xrightarrow[h\nu]{NBS}$ b. $CH_2=CH-CH_3$ $\xrightarrow[h\nu]{NBS}$ c. $CH_2=CH-CH_3$ $\xrightarrow{Br_2}$

ii. How can the two isomers having molecular formula C_2H_6O be distinguished by IR spectroscopy.

iii. What is auto-oxidation? Give mechanism of auto-oxidation of benzaldehyde?

iv. Which of the indicated bonds absorbs at higher ν ~ in an IR spectrum?

a. $(CH_3)_2C=O$ or $(CH_3)_2CH-OH$ b. $(CH_3)_2C=NCH_3$ or $(CH_3)_2CH-NHCH_3$ c. 

v. Define lambert beer law and Differentiate hypochromic and bathochromic shift?

vi. What product is formed when $CH_3OCH_2CH_2CCCH_2CH(CH_3)_2$ is treated with each reagent: (a) H_2 (excess), Pd-C; (b) H_2 (1 equiv), Lindlar catalyst; (c) H_2 (excess), Lindlar catalyst; (d) Na, NH_3?

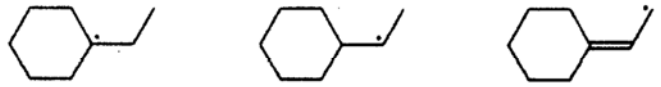
Answer the following questions.

Q. No. 2 i. Give mechanism of Corey-Kim oxidation of primary alcohols to aldehyde. (5)

ii. What is reductive amination? Give different variations and modifications of reaction. (5)

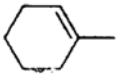
Q. No. 3 i. Rank each group of radicals in order of increasing stability and give reason. (5)

a. $(CH_3)_2\dot{C}CH_2CH(CH_3)_2$ $(CH_3)_2CH\dot{C}HCH(CH_3)_2$ $(CH_3)_2CHCH_2CH(CH_3)\dot{C}H_2$

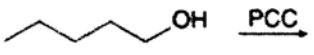
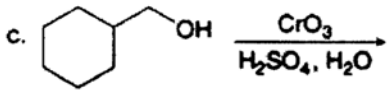
b. 

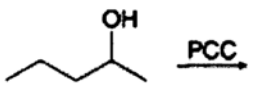
ii. Draw the product(s) formed when each alkene is treated with either

[1] HBr alone; or [2] HBr in the presence of peroxides.(5)

a. $CH_2=CHCH_2CH_2CH_2CH_3$ b.  c. $CH_3CH=CHCH_2CH_2CH_3$

Q. No. 4. How would you complete these reactions with mechanism? (4x2.5=10)

a.  c. 

b.  d.