



PAPER: Organic Chemistry
Course Code: CHEM-305 Part-I (Compulsory)

MAX. TIME: 15 Min.

MAX. MARKS: 10

Signature of Supdt.:

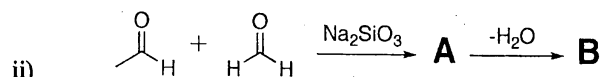
Attempt this Paper on this Question Sheet only.

Please encircle the correct option. Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer, cutting and overwriting is not allowed. (1x10=10)

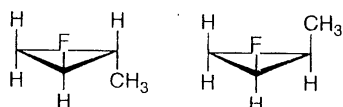
- i) Which among the following show geometric isomerism;
- a) $\text{CH}_3\text{CH}=\text{CHF}$ b) $(\text{CH}_3)_2\text{C}=\text{CHF}$
c) $\text{CH}_3\text{CH}=\text{CH}_2$ d) $(\text{CH}_3)_2\text{C}=\text{CH}_2$



What is B in above reaction;

- a) Acrolein b) Butenal
c) Crotonaldehyde d) both a & b

iii) The molecules shown below are;



- a) Enantiomers
b) Diastereoisomers
c) Identical
d) None

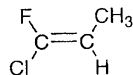
iv) Which conformation is most stable for cyclohexane;



v) Which of the following is more acidic;

- a) Phenol b) *o*-nitrophenol
c) *m*-nitrophenol d) *p*-nitrophenol

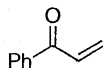
vi) Assign *E* or *Z* notation to the following compound;



- a) *E* b) *Z*
c) *R* d) None

P.T.O.

vii) Which combination of carbonyl compounds give phenyl vinyl ketone by an aldol condensation;

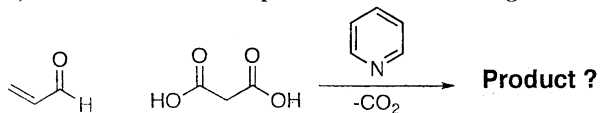


- a) Acetophenone & ketone
- b) Acetophenone & aldehyde
- c) Benzaldehyde & aldehyde
- d) Benzaldehyde & ketone

viii) Which of them is optically inactive;

- a) Allenes
- b) *ortho* substituted biphenyls
- c) Akynes
- d) Spiranes

ix) What will be the product of the following reaction;



- a) *Trans*-2, 4-pentadienoic acid
- b) *Cis*-2, 4-pentadienoic acid
- c) 3-Amino benzoic acid
- d) 2-Amino benzoic acid

x) Which is the most basic of the following compounds;

- a) Aniline
- b) *m*-nitroaniline
- c) *p*-nitroaniline
- d) *o*-nitroaniline



UNIVERSITY OF THE PUNJAB

Fifth Semester – 2019

Examination: B.S. 4 Years Program

Roll No.

PAPER: Organic Chemistry

Course Code: CHEM-305 Part – II

MAX. TIME: 2 Hrs. 45 Min.

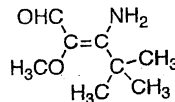
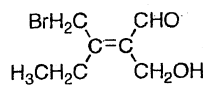
MAX. MARKS: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED.

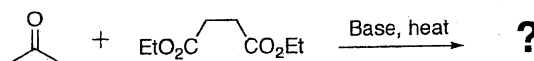
Q. No: 2 Answer the short questions.

(5 x 4 = 20)

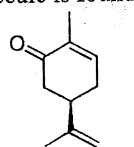
- a) Why the overall ring strain is minimum in cyclohexane, although the angle strain is minimum in cyclopentane.
- b) Assign *E* or *Z* configuration to the following compounds.



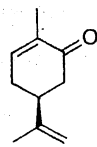
- c) Identify the named reaction and give its mechanism.



- d) Why amides are less basic than alkyl amines and benzoic acid is a stronger acid than cyclohexanoic acid.
- e) Carvone exists as two different stereoisomers. The *R* enantiomer is found in spearmint oil and the *S* isomer is found in caraway seeds. Which of the following molecule is found in spearmint oil?



(-)-carvone

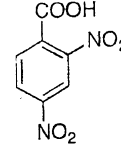
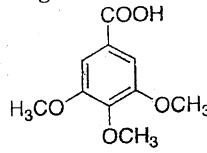
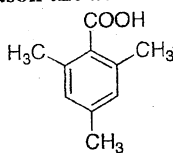
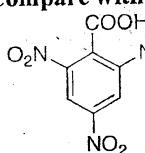


(+)-carvone

Q. No: 3 Answer the following long questions.

(30)

- a) Explain three examples of different classes of compounds which do not have chiral carbon but show optical activity. (6)
- b) Draw conformers of both *cis* and *trans* 1,2-dibromocyclohexane and mention the most stable conformer of both with reason. (4)
- c) i) Compare with reason the acidic strength of the following acids. (8)



- ii) Compare with reason the basic strength of the following. (2)



- d) Give detailed mechanism, conditions and synthetic applications of Reformatsky condensation and Mannich reaction. (10)