



HCL-003-045501

Seat No. \_\_\_\_\_

**B. Voc. Chemical Technology  
(Sem. V) (CBCS) Examination**

October – 2017

**BVCT-501 : Stereochemistry &  
Organic Reaction Mechanism**

**Faculty Code : 003**

**Subject Code : 045501**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

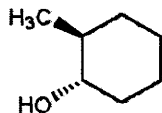
- Instructions :** (1) All questions are compulsory and carry equal marks.  
(2) Draw diagram and/or scheme wherever necessary.

1 (a) Answer the following questions : 10

- (1) Is the molecule shown here chiral or achiral?

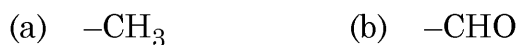


- (2) How many asymmetric carbons are present in the compound below? Mark them all with \* sign.

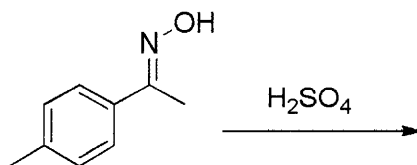


- (3) Define: Asymmetric center.  
(4) Draw cis and trans 1,2-dihydroxycyclobutane.  
(5) Benzene gives decolorization test with acidic  $\text{KMnO}_4$ . True or False?  
(6)  $\text{S}_\text{N}^2$  reaction is a one step reaction. True or False?  
(7) Draw p-chlorotoluene and determine no of pi electrons in it.

(8) Arrange following groups in to decreasing priority for R,S nomenclature system :



(9) Complete the reaction :



(10) Draw all possible structural isomers of  $\text{C}_4\text{H}_{10}$ .

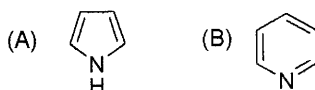
(b) Answer the following questions :

20

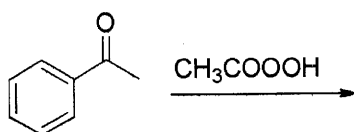
(1) Enlist the criteria of Aromaticity.

(2) Give any 4 examples of constitutional (structural) isomers.

(3) Which of the following is more basic? Justify your answer with reasons.



(4) Identify the following reaction and write its product.

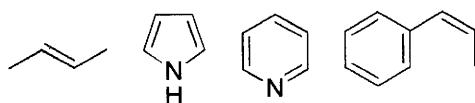


(5) Discuss aromaticity of tropyliumcation.

(6) Differentiate meso compound and racemic mixture.

(7) Complete the reaction :  $\text{Cl}_2 + \text{AlCl}_3 \rightarrow ?$

(8) Classify following examples into aromatic and non-aromatic compounds.



(9) Explain briefly : Markovnikov's rule.

(10) Give preparation of  $\text{HN}_3$ .

**2** Answer any 4 out of the following 6 questions : **20**

- (1) Give principal, mechanism and application of Friedel Crafts Acylation reaction.
- (2) Explain in detail: Dieckmann condensation.
- (3) Explain principle, mechanism and application of Wurtz-Fittig reaction.
- (4) Explain Nitration of Benzene with mechanism.
- (5) Write a comparative note on electrophilic attack on benzene and on cyclohexene.
- (6) Explain Kekulé's structure of benzene and its aromatic behaviour.

**3** Answer any 4 out of the following 6 questions : **20**

- (1) Explain principle, mechanism (acid or base catalyzed - any one), and application of aldol condensation.
- (2) Differentiate between cis-trans isomerism and R,S isomerism with examples.
- (3) Describe in detail: Curtius rearrangement.
- (4) Explain inversion of configuration during  $S_N1$  reaction with example.
- (5) Write the synthesis of caprolactam from cyclohexanone. Identify the name reaction involved in the synthesis and give its mechanism.
- (6) Which instrument is used to measure optical activity? Describe its working with illustration.

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