

D-6312

M.Sc. (Ist Semester) Examination, 2020

CHEMISTRY (Organic Chemistry)

Time Allowed : Three Hours

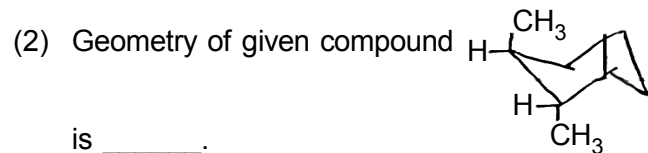
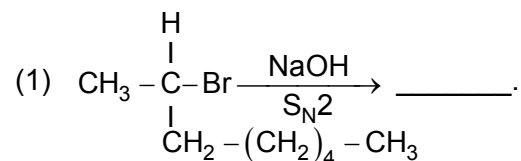
Maximum Marks : 70

Minimum Pass Marks : 25

SECTION - A

Note : Attempt any 10 questions. Each question carries one mark. **1×10=10**

Q. 1. Fill in the blanks :

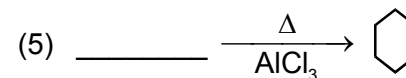
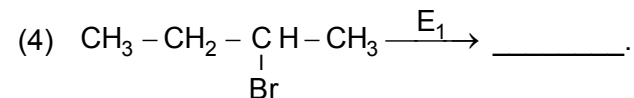


(3) The amination of pyridine ring and other heterocyclic compound by amide ion known as _____ reaction.

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(2)

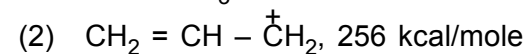
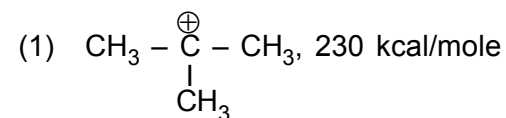


Select the correct answer :

(6) The number of optically active isomers of $\text{HOCH}_2(\text{CHOH})_4\text{CHO}$ is :

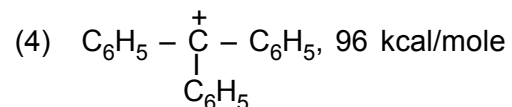
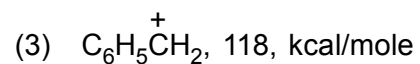
- (a) 4
- (b) 8
- (c) 16
- (d) 24

(7) Hydride affinity of four carbocation are given below. Arrange these carbocation in their decreasing order of stability on the basis of hydride ion affinity :

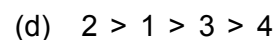
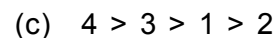
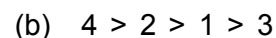
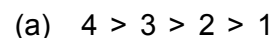


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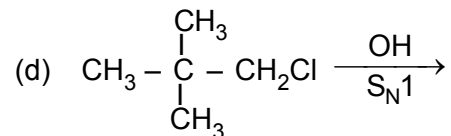
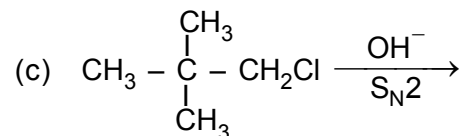
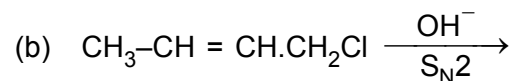
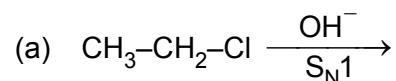
(3)



Select the correct answer from the code given below :



(8) Which of the following reaction will accompanied by rearrangement ?



(4)

(9) Carbene give which of the following reaction ?

(1) Addition with alkene

(2) Addition with arynes

(3) Insertion into C-H bond

(4) Insertion into C-P bond

Select the correct answer from the code

given below :

(a) Only 1

(b) 1 and 2

(c) 1, 2 and 3

(d) Only 4

(10) In Reimer-Tiemann reaction product

formation take place by which reactions ?

(a) Elimination

(b) ArSE

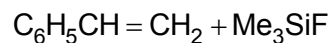
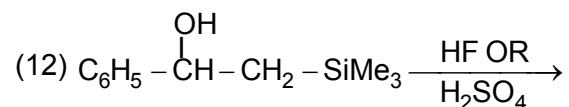
(c) S_N reaction

(d) All of these

(5)

(11) Acetic anhydride is a compound used in :

- (a) Reimer-Tiemann reaction
- (b) Vilsmeier Haack reaction
- (c) Friedel craft reaction
- (d) Dieckmann condensation



This reaction is called :

- (a) Stark Enamine reaction
- (b) Von Braun reaction
- (c) Peterson reaction
- (d) Reimer-Tiemann reaction

SECTION - B

Note : Attempt any five questions. Each question carries

2 marks. (Word limit 25-30 words) : **2×5=10**

- Q. 2.** (1) Differentiate enantiomers & diastereomers.
(2) Explain stability of carbanions.

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(6)

- (3) Explain Fischer projection formula.
- (4) Discuss structure of carbene.
- (5) What is Gattermann-Koch reaction ?
- (6) Give E/Z nomenclature of olefins.
- (7) What do you understand by orientation and reactivity ?

SECTION - C

Note : Attempt any five questions. Each question carries 4 marks. (Word limit – 250 words) : **4×5=20**

- Q. 3.** (1) What are free radicals ? Discuss their stability.
(2) Write a note on Ipso attack.
(3) Discuss any two methods for determination of reaction mechanism.
(4) What is electrophilic substitution ? Explain the bimolecular mechanism of aliphatic electrophilic substitution. Discuss its stereochemistry also.

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(7)

- (5) Describe conformation of 1, 2 or 1, 3-disubstituted cyclohexane.
- (6) What is optical activity and chirality ?
- (7) Describe Hammett and Taft equation.

SECTION - D

Note : Attempt any three questions. Each question carries 10 marks. (Word limit 500 words) : **10×3=30**

- Q. 4.** (1) What are nitrenes ? How are they generated ?
Discuss their structure, stability and chemical reaction.
- (2) Explain nucleophilic substitution at allylic and vinylic carbon.
- (3) Write E_1 and E_2 mechanism. Describe effect of substrate structure, effect of leaving group and effect of the medium on reactivity of elimination reaction.
- (4) Discuss Friedal Craft reaction in detail.

