

National Testing Agency

Question Paper Name :	Organic Chemistry 1 29th Sep 2020 Shift 1
Subject Name :	Organic Chemistry 1
Creation Date :	2020-09-29 13:08:31
Duration :	180
Number of Questions :	34
Total Marks :	100
Display Marks:	Yes

Organic Chemistry 1

Group Number :	1
Group Id :	899514106
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	100
Is this Group for Examiner? :	No

Organic Chemistry 1

Section Id :	899514130
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20

Section Marks :

20

Mark As Answered Required? :

Yes

Sub-Section Number :

1

Sub-Section Id :

899514162

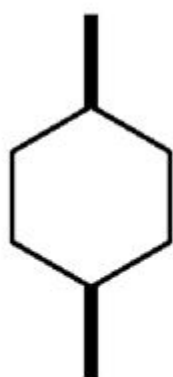
Question Shuffling Allowed :

Yes

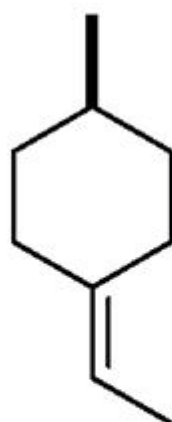
Question Number : 1 Question Id : 8995149409 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

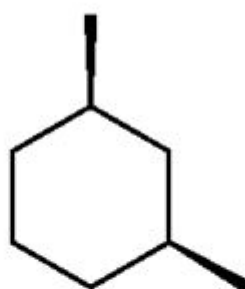
Identify the compound that is optically active but there is no chiral center



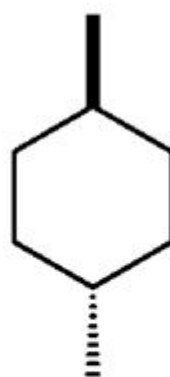
A



B



C



D

1) A only

2) B only

3) A and C only

4) C and D only

Options :

89951437098. 1

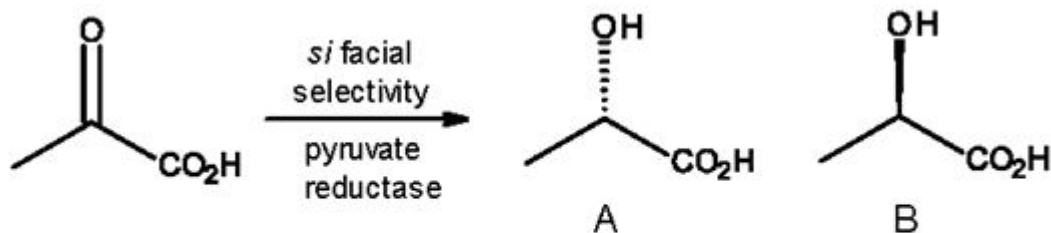
89951437099. 2

89951437100. 3

89951437101. 4

Question Number : 2 Question Id : 8995149410 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

Identify the product for the following transformation



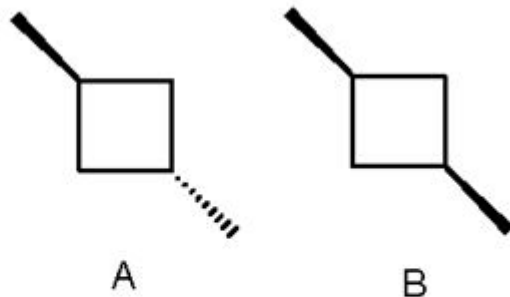
- 1) A only
- 2) B only
- 3) A : B in 1:1 ratio
- 4) A : B in 1: 2 ratio

Options :

- 89951437102. 1
- 89951437103. 2
- 89951437104. 3
- 89951437105. 4

Question Number : 3 Question Id : 8995149411 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

How many plane of symmetry are present in the following compounds



- 1) A two and B one
- 2) A zero and B zero
- 3) A one and B two
- 4) A one and B one

Options :

- 89951437106. 1
- 89951437107. 2
- 89951437108. 3
- 89951437109. 4

Question Number : 4 Question Id : 8995149412 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

Stability of the which of the following species cannot be enhanced by hyperconjugation

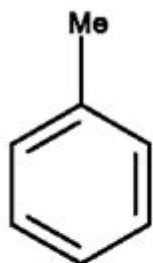
- 1) Carbocation
- 2) Carbanion
- 3) Free radical
- 4) alkene

Options :

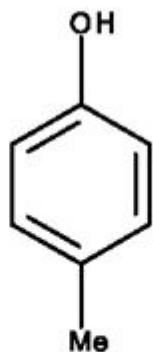
- 89951437110. 1
- 89951437111. 2
- 89951437112. 3
- 89951437113. 4

Question Number : 5 Question Id : 8995149413 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

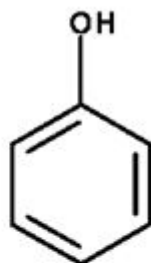
Which of the following compound has maximum dipole



A



B



C

- 1) $A < C < B$
- 2) $B < A < C$
- 3) $A < B < C$
- 4) $C < B < A$

Options :

89951437114. 1

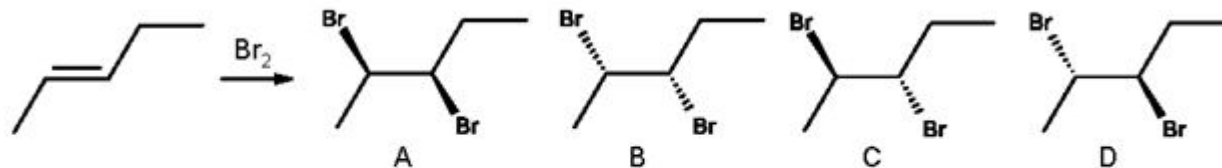
89951437115. 2

89951437116. 3

89951437117. 4

Question Number : 6 Question Id : 8995149414 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

Identify the product for the following reaction



- 1) A and B
- 2) A and C
- 3) C and D
- 4) B and D

Options :

89951437118. 1
89951437119. 2
89951437120. 3
89951437121. 4

Question Number : 7 Question Id : 8995149415 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

Which of the following species does not have six electron on the central atom

- 1) Carbocation
- 2) Carbanion
- 3) Borane
- 4) Carbene

Options :

89951437122. 1
89951437123. 2
89951437124. 3
89951437125. 4

Question Number : 8 Question Id : 8995149416 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

Which of the following species is not having sp^2 hybridisation

- 1) Alkene
- 2) Benzene
- 3) Singlet carbene
- 4) Triplet carbene

Options :

89951437126. 1

89951437127. 2

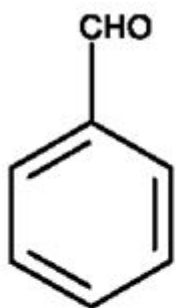
89951437128. 3

89951437129. 4

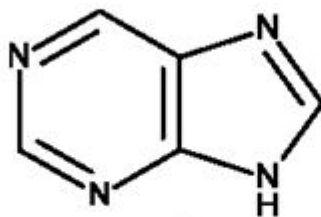
Question Number : 9 Question Id : 8995149417 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

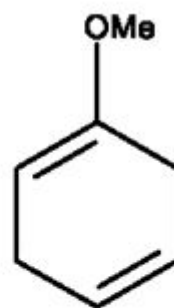
Which of the following is not an aromatic compound



A



B



C



D

- 1) B and C only
- 2) B only
- 3) D only
- 4) C only

Options :

89951437130. 1

89951437131. 2

89951437132. 3

89951437133. 4

Question Number : 10 Question Id : 8995149418 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

What is the structure of vinyl carbanion

- 1) Linear
- 2) Bent
- 3) Pyramidal
- 4) Tetrahedral

Options :

- 89951437134. 1
- 89951437135. 2
- 89951437136. 3
- 89951437137. 4

Question Number : 11 Question Id : 8995149419 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

Which of the following compound can undergo ring flip very easily

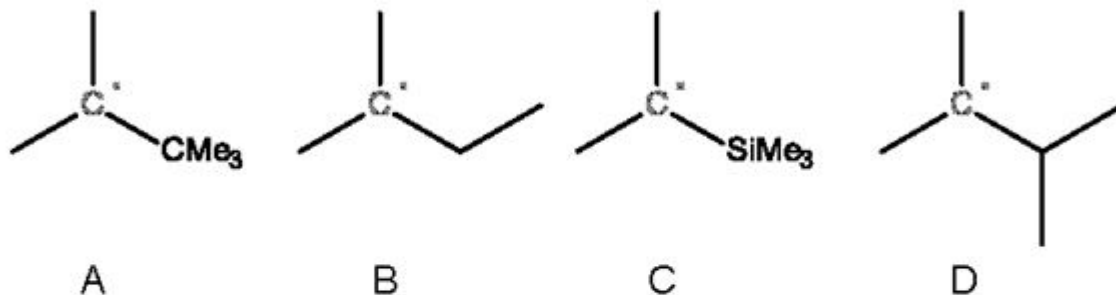
- 1) Cis-1,2-dimethylcyclohexane
- 2) trans-1,2-dimethylcyclohexane
- 3) Cis-1,3-dimethylcyclohexane
- 4) trans-1,2-dimethylcyclohexane

Options :

- 89951437138. 1
- 89951437139. 2
- 89951437140. 3
- 89951437141. 4

Question Number : 12 Question Id : 8995149420 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

The correct stability order of following free radicals are



- 1) C > A > D > B
- 2) D > C > B > A
- 3) A > C > D > B
- 4) D > B > A > C

Options :

89951437142. 1

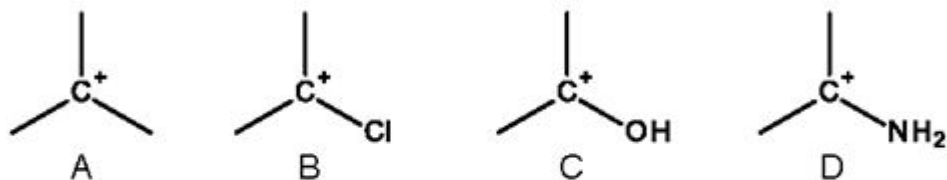
89951437143. 2

89951437144. 3

89951437145. 4

Question Number : 13 Question Id : 8995149421 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

Which is the least stable carbocations



- 1) D only
- 2) B only
- 3) C only
- 4) A only

Options :

89951437146. 1

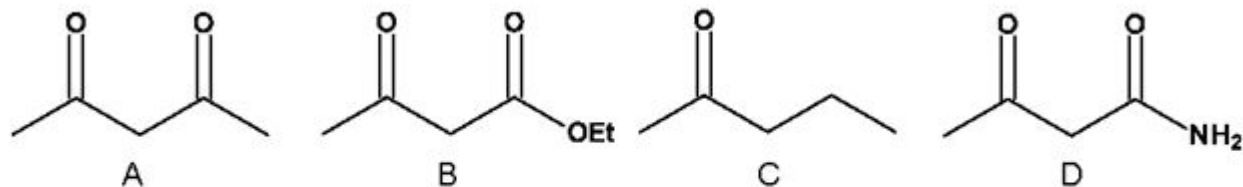
89951437147. 2

89951437148. 3

89951437149. 4

Question Number : 14 Question Id : 8995149422 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

Which of the following is having maximum enol content



- 1) A \approx B
- 2) A only
- 3) C \approx D
- 4) B only

Options :

89951437150. 1

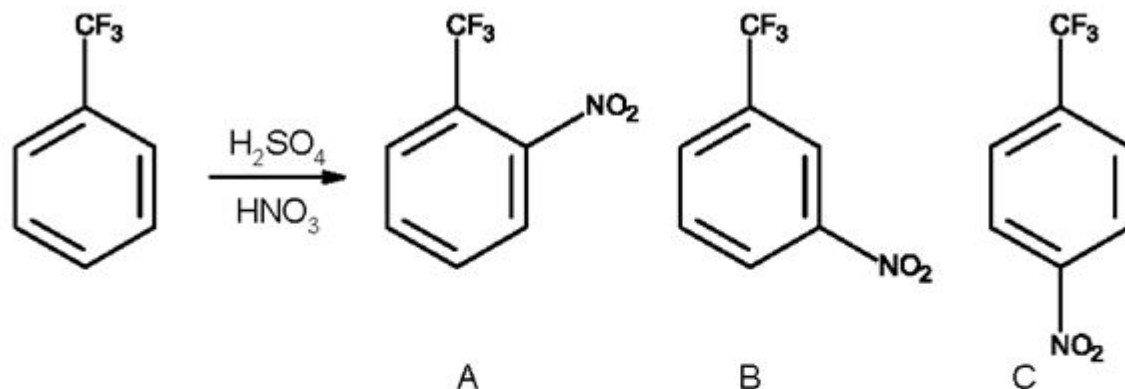
89951437151. 2

89951437152. 3

89951437153. 4

Question Number : 15 Question Id : 8995149423 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

Identify the major product for the following transformation (2)



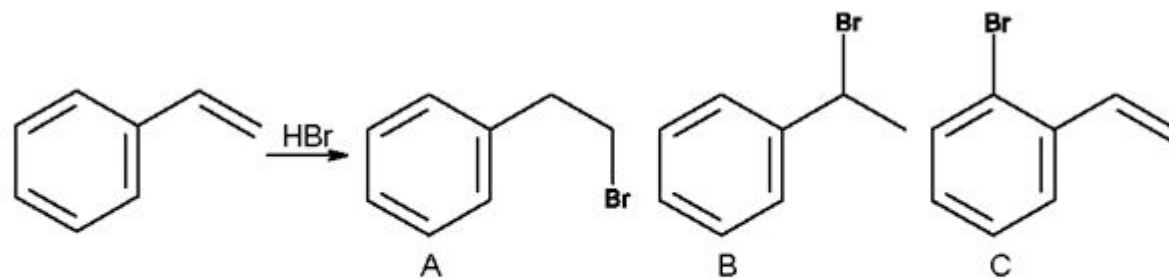
- 1) A only
- 2) B only
- 3) C only
- 4) A and C

Options :

89951437154. 1
89951437155. 2
89951437156. 3
89951437157. 4

Question Number : 16 Question Id : 8995149424 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

Identify the product formation for the following reaction



- 1) A only
- 2) A as major and C as minor
- 3) B only
- 4) B as major and C as minor

Options :

89951437158. 1

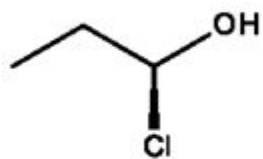
89951437159. 2

89951437160. 3

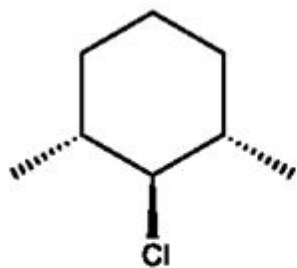
89951437161. 4

Question Number : 17 Question Id : 8995149425 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

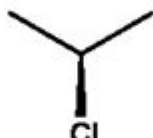
Identify the chiral compound



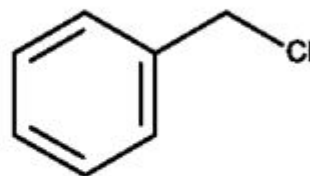
A



B



C



D

- 1) A only
- 2) B only
- 3) C only
- 4) A and C

Options :

89951437162. 1

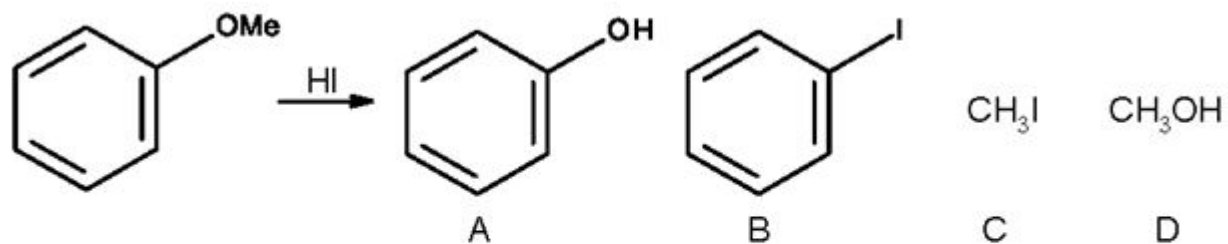
89951437163. 2

89951437164. 3

89951437165. 4

Question Number : 18 Question Id : 8995149426 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

Identify the product for the following reaction



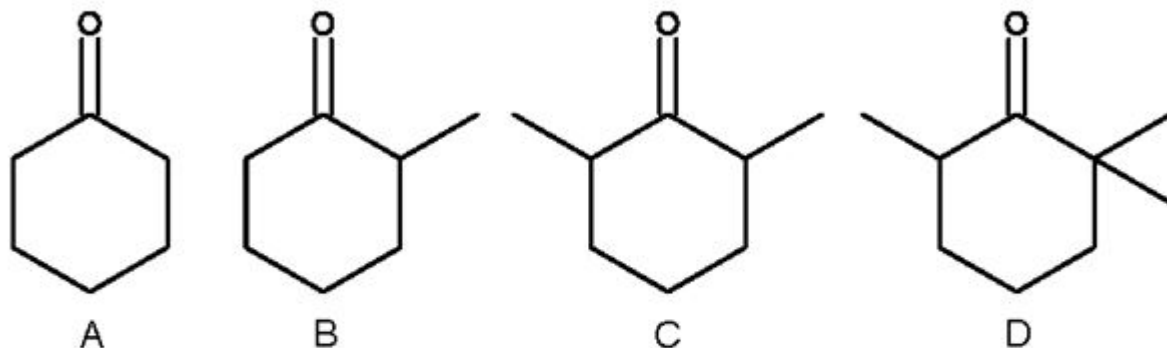
- 1) A and D
- 2) B only
- 3) A and C
- 4) B and C

Options :

89951437166. 1
89951437167. 2
89951437168. 3
89951437169. 4

Question Number : 19 Question Id : 8995149427 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 1 Wrong Marks : 0

Identify the order of cyanohydrin formation



- 1) $A > B > C > D$
- 2) $A > B > C \approx D$
- 3) $A \approx B > C > D$
- 4) $D > B > A > C$

Options :

89951437170. 1
89951437171. 2
89951437172. 3
89951437173. 4

Question Number : 20 Question Id : 8995149428 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No
Correct Marks : 1 Wrong Marks : 0

Arrange the following compounds according to increasing order of nucleophilic substitution reaction

- 1) Butanone < Acetophenone < Propanal < Formaldehyde
- 2) Acetophenone < Propanal < Butanone < Formaldehyde
- 3) Propanal < Formaldehyde < Acetophenone < Butanone
- 4) Acetophenone < Butanone < Propanal < Formaldehyde

Options :

89951437174. 1

89951437175. 2

89951437176. 3

89951437177. 4

Organic Chemistry II

Section Id :	899514131
Section Number :	2
Section type :	Offline
Mandatory or Optional :	Mandatory
Number of Questions :	7
Number of Questions to be attempted :	5
Section Marks :	30
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	899514163
Question Shuffling Allowed :	No

Question Number : 21 Question Id : 8995149429 Question Type : SUBJECTIVE

Correct Marks : 6

Arrange the three nitrophenols (ortho, meta, para) in the increasing order of acidity. Explain why the pKa of phenolic hydrogens are different.

Question Number : 22 Question Id : 8995149430 Question Type : SUBJECTIVE

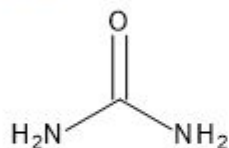
Correct Marks : 6

- Show with proper mechanism, alcohol can act like a nucleophile and an electrophile.
- Between Benzoic acid and acetic acid which is more acidic and why?

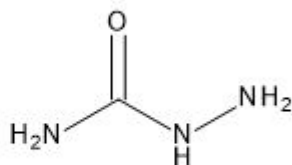
Question Number : 23 Question Id : 8995149431 Question Type : SUBJECTIVE

Correct Marks : 6

a) Between compound A and B, which one will undergo nucleophilic reaction with carbonyl compounds. Justify your answer.



A



B

b) Between chlorobenzene and cyclohexyl chloride, which is having high dipole moment and why?

Question Number : 24 Question Id : 8995149432 Question Type : SUBJECTIVE

Correct Marks : 6

If nucleophilic substitution has to occur on aromatic systems, which type of groups will favour it? With suitable mechanism explain the same.

Question Number : 25 Question Id : 8995149433 Question Type : SUBJECTIVE

Correct Marks : 6

Why *Re* and *si* face nucleophilic attack on prochiral ketone produces two stereogenic products. Explain with suitable example.

Question Number : 26 Question Id : 8995149434 Question Type : SUBJECTIVE

Correct Marks : 6

Using phenanthrene as example explain Clar rule.

Question Number : 27 Question Id : 8995149435 Question Type : SUBJECTIVE

Correct Marks : 6

Pyridine, Pyridinium ion and pyrlium ion are aromatic. But pyran is not aromatic. Explain with suitable structures.

Section Id :	899514132
Section Number :	3
Section type :	Offline
Mandatory or Optional :	Mandatory
Number of Questions :	7
Number of Questions to be attempted :	5
Section Marks :	50
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	899514164
Question Shuffling Allowed :	No

Question Number : 28 Question Id : 8995149436 Question Type : SUBJECTIVE

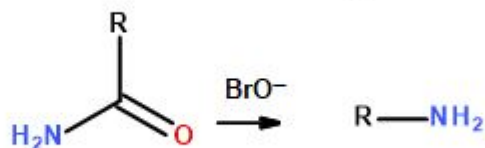
Correct Marks : 10

What are enantiotopic and diastereotopic protons. Using 3-pentanol as an example describe it.

Question Number : 29 Question Id : 8995149437 Question Type : SUBJECTIVE

Correct Marks : 10

A) Draw the stepwise mechanism for Hofmann rearrangement.



B) How water can act like a base? Draw the mechanism and explain.

Question Number : 30 Question Id : 8995149438 Question Type : SUBJECTIVE

Correct Marks : 10

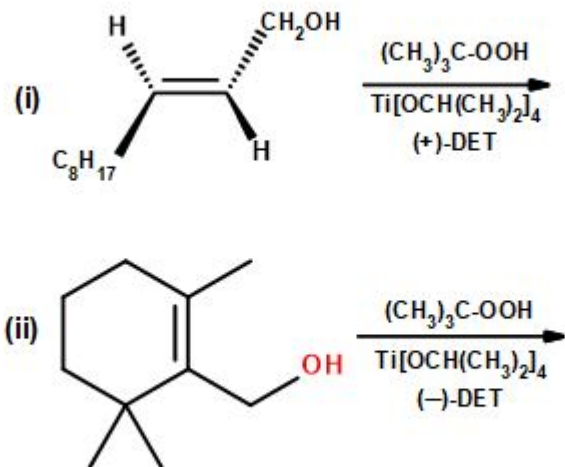
A) Nitration of aromatic compounds are generally carried out by using nitrating mixture (Con. HNO_3 and Con. H_2SO_4). But phenol can be nitrated using dil. HNO_3 . Explain with suitable mechanism how this happens.

B) With suitable example explain the Possible reactions of ipso intermediate (i) Nucleophilic capture and (ii) Side Chain Modification

Question Number : 31 Question Id : 8995149439 Question Type : SUBJECTIVE

Correct Marks : 10

A) Identify the major product with proper stereochemistry for the following Sharpless epoxidation

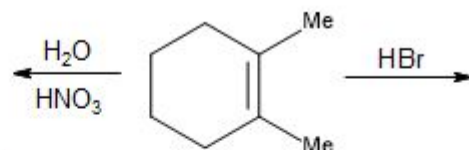


B) With suitable examples show what are the products that are formed in the Click reaction when no metal catalyst is used and when copper catalyst is used.

Question Number : 32 Question Id : 8995149440 Question Type : SUBJECTIVE

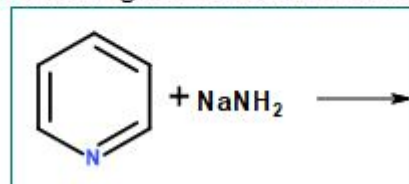
Correct Marks : 10

A) Explain the product formation in the following two reactions from the same starting



material using Hammond postulate.

B) Identify the product for the following reaction and write the mechanism.



Question Number : 33 Question Id : 8995149441 Question Type : SUBJECTIVE

Correct Marks : 10

A) The σ values for both *para* and *meta* methoxy benzoate are -0.27 and 0.12 for base catalyzed hydrolysis reaction. Explain the reaction mechanism.

B) Write briefly about axial and planar chirality with suitable example.

Question Number : 34 Question Id : 8995149442 Question Type : SUBJECTIVE

Correct Marks : 10

A) The solvolysis of two different alkenes, namely 3-chloro-1-butene and 1-chloro-2-butene gave the same mixture of two isomeric ethers. With suitable mechanism explain.

B) using the following example show how the Neopentyl rearrangement occurs.

