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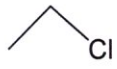
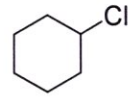
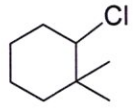
|---|---|---|
| Sanjay Ghodawat University, Kolhapur<br>Established as State Private University under Govt. of Maharashtra. Act No XL, 2017 | | **2018-19** |
| **Year and Program: 2018-19 F. Y. M.Sc.** | **School of Science** | **Department of Chemistry** |
| **Course Code: CHS 501** | **Course Title: Organic chemistry-I** | **Semester – Odd (I)** |
| **Day and Date: Thursday 29 Nov 2018** | **End Semester Examination** | **Time: 3 hrs, Max Marks: 100**<br>10:am to 10:30: am |
| **PRN:** | **Seat No:** | **Section A Marks out of 20:**<br>10:00 |
| **Jr. Supervisor sign:** | **Student Sign:** | |

## Section A

**Instructions**: 1) All Questions are compulsory.
2) For MCQs mark tic (√) for correct answer. No marks for multiple tics (√).
3) Section A should be submitted to Jr Supervisor immediately after first 30 min.

| **Q.1** | Multiple choice questions. | **Marks 20** | level | CO |
|---|---|---|---|---|
| **1** | The given carbanion $X\text{-}\overset{\ominus}{C}H_2$ will be most stable when X is:<br>a) –COCH3<br>b) –CN<br>c) –NO2<br>d) -COOH | | L-1 | 1 |
| **2** | Which one of the following will be most reactive in SN2 reaction?<br>a)  <br>b)  <br>c)  <br>d) | 2 | 1 | |
| **3** | Which of the following anion is the best nucleophile?<br>a) $AcO^-$<br>b) $HO^-$<br>c) $TsO^-$<br>d) $EtO^-$ | 2 | 1 | |
| **4** | Which among of the following undergoes nitration most readily?<br>a) Benzene<br>b) Acetanilide<br>c) Acetophenone | 1 | 2 | |

d) Chlorobenzene

5 Which of the following name reaction gives ortho /para formylation product? 2 2

a) Gattermann-Koch reaction
b) Diazonium coupling reaction
c) Vilsmeier-Haack reaction
d) Friedel-crafts reaction

6 Addition of the bromine in alkene, gives..... 1 2

a) Vicinal-dibromide
b) Germinal-dibromide
c) Bromo-alkane.
d) None of these.

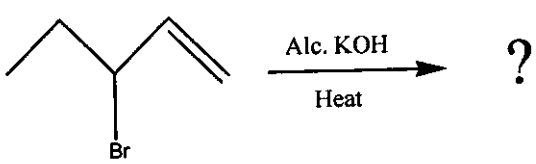
7 Reaction intermediate involved in E1 reaction is: 1 3

a) Carbocation
b) Carbanion
c) Carbene.
d) Cyclic transition state.

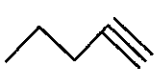
8 Which of the following is correctly matched? 2 3

a) Saytzeff's rule, lest substituted alkene.
b) Hoffmann rule, most substituted alkene.
c) E1cb reaction, Hoffmann elimination.
d) E1 reaction, Hoffmann product.

9 In the given reaction, which is the correct product? 2 3




a) b)

c) d) 

10 Which of the following compound undergoes E1cb reaction? 2 3

a) $CF_3$-$CHCl_2$
b) $CH_3$-$CH_2Cl$
c) $CH_3$-$CH_2$-$CH_2$-F.
d) None of these.

11 Which of the following rearrangement don't having isocyanate as an intermediate? 2 3

a) Curtius rearrangement
b) Beckmann rearrangement.
c) Hofmann rearrangement
d) Lossen rearrangement.

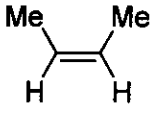
**12** In Fries rearrangement phenolic ester is converted into 2 3
a) Amine
b) Ketone
c) Hydroxyl aryl ketone.
d) None of these

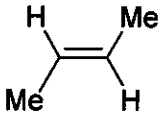
**13** The Demjanov rearrangement is a method to produce..... 1 3
a) 1-carbon ring enlargement in four, five or six membered rings.
b) ortho and / or para aryl-alkylated aniline.
c) Primary amine
d) Formyl phenol

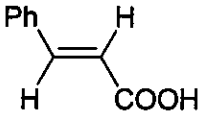
**14** The number of configurational isomers of 2,3-dibromocinamic acid is: 2 4
a) 2.
b) 3.
c) 4.
d) 5.

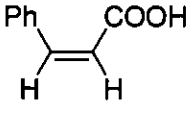
**15** The number of configurational isomers of the compound $HOCH_2(CHOH)_3CH_2OH$ is: 2 4
a) 4.
b) 8.
c) 16.
d) 32.

**16** Which of the following give meso form with $Br_2$? 1 4

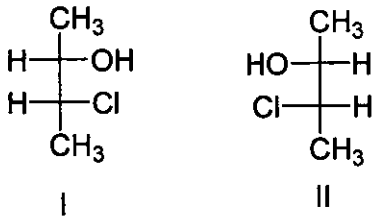
a) 


b) 


c) 

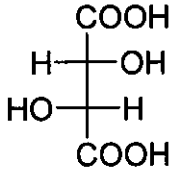

d) 

**17** What is the correct relationship between this two molecule? 2 4



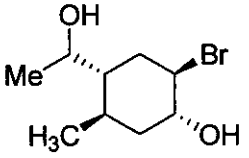

a) Diastereomers.
b) enantiomers.
c) Geometrical isomer.
d) None of these.

**18** Correct configuration of the given compound is..... 2 4



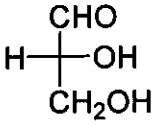

*a) 2R,3R.*
*b) 2S,3S*
*c) 2R,3S*
*d) 2S,3R*

**19** How many chiral center present in given structure? 2 4




a) 2.
b) 5.
c) 6.
d) 4.

**20** Which is the correct configuration of the following compounds 1 4




*a) D.*
*b) L*
*c) Cis.*
*d) Trans*

| | | |
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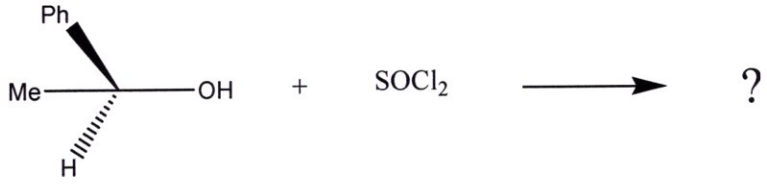
| **Day and Date: Thursday 29 Nov 2018** | **End Semester Examination** | **Time: 3 hrs, Max Marks: 100**<br>10:30 Am to 1:00 pm |
| **PRN:** | **Seat No:** | |

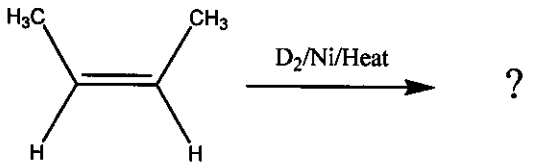
## Section B

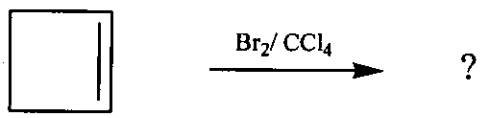
| | | | Marks | level | CO |
|---|---|---|---|---|---|
| **Q.2** | | **Attempt any two of the following:** | **12** | | |
| | **a)** | What is carbocation? How they are generated? Discuss their characteristics. | **6** | 2 | 1 |
| | **b)** | What is SN1 reaction? Give evidence for mechanism? Explain SN1 reaction with its mechanism. | **6** | 2 | 1 |
| | **c)** | Identify following reaction? Explain detail reaction mechanism with its stereochemistry | **6** | 3 | 1 |



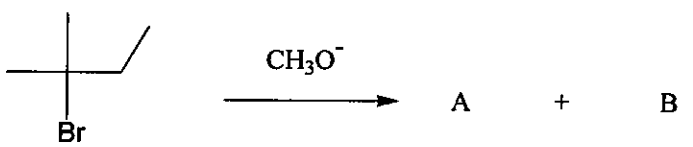

| | | | | | |
|---|---|---|---|---|---|
| **Q.3** | | **Attempt any two of the following:** | **12** | | |
| | **a)** | Explain following electrophilic reaction.<br>i) Nitration.<br>ii) Friedel-Crafts alkylation. | **6** | 2 | 2 |
| | **b)** | Explain Von Richter rearrangement with mechanism and give its application. | **6** | 2 | 2 |

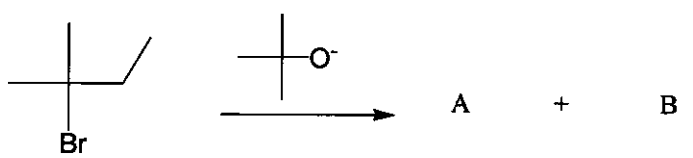
| | | | | |
|---|---|---|---|---|
| **c)** | Complete following reaction and give stereochemistry of the product. | **6** | 2 | 2 |

i) 


ii) 


| | | | | |
|---|---|---|---|---|
| **Q.4** | **a)** | **Attempt any two of the following:** | **12** | |
| | **i)** | What is E2 reaction? Give its evidence? Explain E2 reaction with its mechanism | **6** | 2 | 3 |
| | **ii)** | Give the product A and B. Explain which product is major and why? | **6** | 3 | 3 |

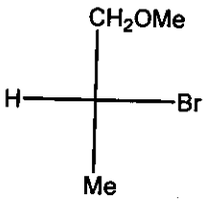
I) 

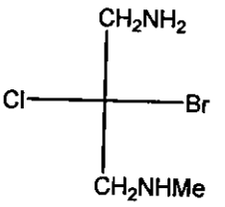

II) 

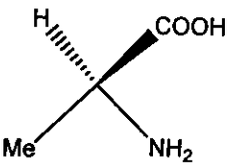

| | | | | |
|---|---|---|---|---|
| **iii)** | Give comparison between E1, E2 and E1cb reaction | **6** | 2 | 3 |
| **b)** | **Write short note on any four of the following rearrangement** | **16** | | |
| **i)** | Beckmann rearrangement. | **4** | 2 | 3 |
| **ii)** | Schmidt rearrangement. | **4** | 2 | 3 |
| **iii)** | Fries rearrangement. | **4** | 2 | 3 |
| **iv)** | Lossen rearrangement. | **4** | 2 | 3 |
| **v)** | Ortaon rearrangement. | **4** | 2 | 3 |

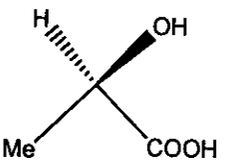
**Q.5 a) Attempt any two of the following:** **16**

i) Assign *R* or *S* configuration to the following compounds. Justify **8** 3 4

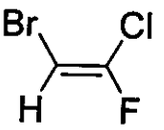
A) 

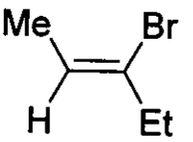

B) 

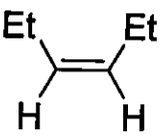

C) 

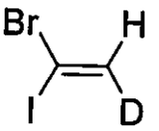

D) 


ii) Assign *E* or *Z* configuration to the following compounds. Explain. **8** 3 4

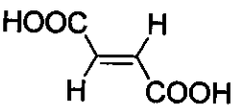
A) 

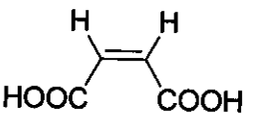

B) 

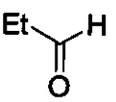

C) 

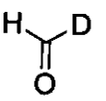

D) 


iii) Assign *Re* or *Si* configuration to the following compounds. Justify **8** 3 4

A) 


B) 

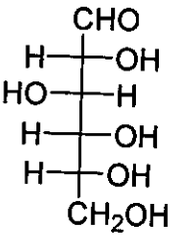

C) 


D) 


**b) Attempt any three of the following:** **12**

i) What is Isomerism? Give its types with example. **4** 2 4

| | | | | |
|---|---|---|---|---|
| **ii)** | Assign the absolute configuration *R* and *S* to each chiral center in the following | **4** | 2 | 4 |




| | | | | |
|---|---|---|---|---|
| **iii)** | Write sequence rule with example. | **4** | 2 | 4 |
| **iv)** | Write a fischer projection, sawhorse (staggered) and Newmann (staggered) formulae of threo-2,3 dichloro-3-phenylpropanoic acid (PhCHClCHClCOOH) | **4** | 3 | 4 |

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