

Write the following information in the first page of Answer Script before starting answer

ODD SEMESTER EXAMINATION: 2020-21

Exam ID Number _____

Course _____ Semester _____

Paper Code _____ Paper Title _____

Type of Exam: _____ (Regular/Back/Improvement)

Important Instruction for students:

1. Student should write objective and descriptive answer on plain white paper.
2. Give page number in each page starting from 1st page.
3. After completion of examination, Scan all pages, convert into a single PDF, rename the file with Class Roll No. (2019MBA15) and upload to the Google classroom as attachment.
4. Exam timing from 10am – 1pm (for morning shift).
5. Question Paper will be uploaded before 10 mins from the schedule time.
6. Additional 20 mins time will be given for scanning and uploading the single PDF file.
7. Student will be marked as ABSENT if failed to upload the PDF answer script due to any reason.

BBT / BMB
THIRD SEMESTER
CHEMISTRY I
BBT-303 / BMB-305 [REPEAT]

Duration : 3 hrs.

Full Marks : 70

[PART-A: Objective]

Time : 30 min.

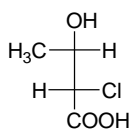
Marks : 20

Choose the correct answer from the following:

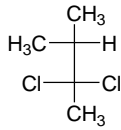
1X20=20

1. Which of the following statements is correct.
- | | |
|--|---|
| <p>a. Geometrical isomers are also optical isomers.</p> <p>c. Enantiomers have same physical properties.</p> | <p>b. Diastereomers are mirror image structures.</p> <p>d. Diastereomers have same physical properties.</p> |
|--|---|

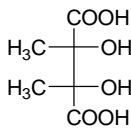
2. Which of the following molecule/s is/are optically active



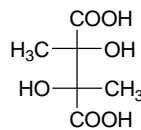
(A)



(B)



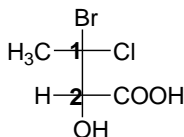
(C)



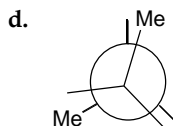
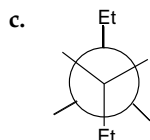
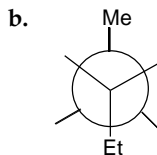
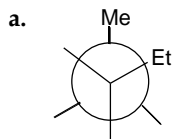
(D)

- | | |
|---|---|
| <p>a. A & B</p> <p>c. C & D</p> | <p>b. B & C</p> <p>d. A & C</p> |
|---|---|

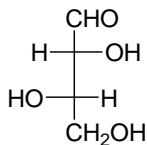
3. The configurations of chiral centres 1 and 2 in the following molecule are respectively



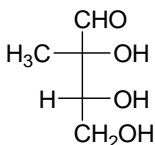
- | | |
|-------------------------------------|-------------------------------------|
| <p>a. S and R</p> <p>c. S and S</p> | <p>b. R and S</p> <p>d. R and R</p> |
|-------------------------------------|-------------------------------------|
4. Which of the following conformations of ethylene glycol will be most stable?



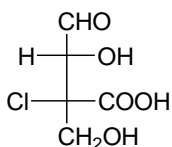
5. L-configuration in the following set of molecules, are



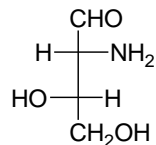
(A)



(B)

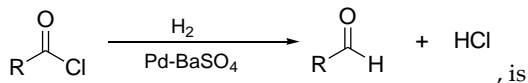


(C)



(D)

- a. A & B
 c. A & D
- b. B & C
 d. B & D
6. Which of the following statement is not correct.
 a. An α -alcohol is oxidised to aldehyde
 c. Ketones on reduction can give a β -alcohol.
- b. Carboxylic acids on oxidation give ketones.
 d. A carboxylic acid on reduction can produce a β -alcohol.
7. Which of the following is a **reducing agent**?
 a. H_2O_2
 c. PCC
- b. Na in ethanol
 d. MnO_2
8. Bouveault-Blanc reduction involves conversion of
 a. Acid to alcohol
 c. Ester to alcohol
- b. Acid chloride to aldehyde
 d. Acid chloride to alcohol
9. Wulff- Kishner reduction uses the reducing agent
 a. $\text{Na}/\text{C}_2\text{H}_5\text{OH}$
 c. NaOH and NH_2NH_2
- b. $\text{Zn}(\text{Hg})/\text{HCl}$
 d. $\text{AgNO}_3/\text{NH}_4\text{OH}$
10. The following reduction reaction



- a. Rosenmund reduction
 c. Wolff-Kishner reduction
- b. Clammensen reduction
 d. Bouveault-Blanc reduction
11. Which of the following reagent will carry out the following transformation.
 $\text{C}_6\text{H}_5 - \text{CH} = \text{CH} - \text{CHO} \longrightarrow \text{C}_6\text{H}_5 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2\text{OH}$
- a. Na in EtOH
 c. LiAlH_4
- b. NaBH_4
 d. PCC
12. Benzaldehyde when treated with NH_2NH_2 and NaOH will produce.
 a. Benzyl alcohol
 c. Ethyl benzene
- b. Toluene
 d. None of these
13. The solution which is used to detect the presence of aldehyde or ketone is-
 a. 2,4-dinitrophenylhydrazine
 c. Tollens reagent
- b. Benzene solution
 d. None of these

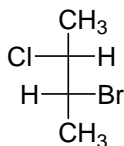
(PART-B : Descriptive)

Time : 2 hrs. 40 min.

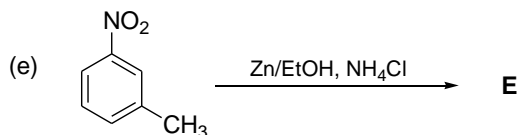
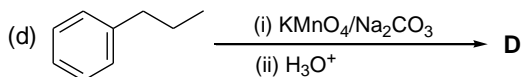
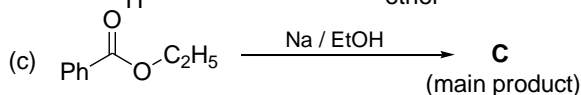
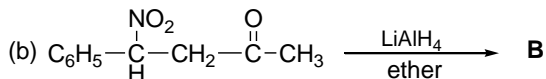
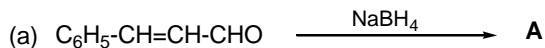
Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. a. Illustrate with example, enantiomers and diastereomers. 4
b. Define oxidation and reduction reaction processes. Oxidation and reduction take place simultaneously – Illustrate. 3
c. What is Saytzeff rule? Explain the rule with 2-chloro butane. 3
2. a. Draw the (i) Newman's projection, (ii) saw-horse projection and (iii) wedge structure for the following molecule. 6



- b. Write notes on Wulff-kishner reduction. 4
3. Write down the structures of the products/reagent **A, B, C, D** and **E** in the following reactions. 2×5=10



4. a. Cyclohexane molecule exist as chair and boat conformations, which conformation is more stable and why? Draw Newman's projection for both these forms. Indicate axial and equatorial bonds in chair form and flagpole bonds in boat form. 5

b. Methyl group in methyl cyclohexane can exist in axial or equatorial bond. Which form is more stable and why. 2

c. Convert the following structures: 3



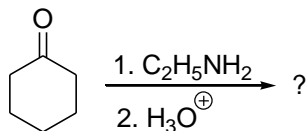
5. a. What is the difference between conformations and configurations of molecules? Illustrate with examples. 3

b. Discuss in details with possible reagents, oxidation of different classes of alcohols. 4

c. Write notes on reduction of aromatic nitro compounds. 3

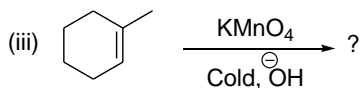
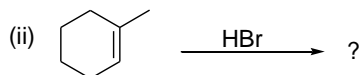
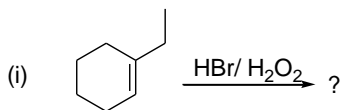
6. a. What happen when acetone is treated with (i) NaHSO_3 (ii) NH_2OH and (iii) NH_3 ? 6

b. Write the product of the following reaction- 4



7. a. Write the product of the following reactions-

1.5×2+2=5



b. Why alkynes less reactive than alkenes towards electrophilic addition reaction? 2

c. How could you distinguish between aldehyde and ketone ?
Explain with chemical equation. 3

8. a. Write the name of the intermediate involves in- 3

a. Markonicovs addition (ii) Anti-Markonicovs addition

b. Write short notes on-

(i) Simple aldol condensation and cross aldol condensation 5

(ii) Cannizaro reaction.

c. What happen when a ketone is treated with Grignard reagent followed by hydrolysis in presence of an acid? 2

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