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.

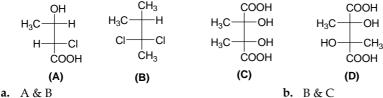
a. Geometrical isomers are also optical ismers.

b. Diastereomers are mirror image structures.

c. Enantiomers have same physical properties.

d. Diastereomers have same physical properties.

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



c. C & D

d. A & C

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



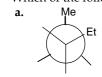
a. Sand R

b. R and S

c. Sand S

d. Rand R

4. Which of the following conformations of ethylene glycol will be most stable?



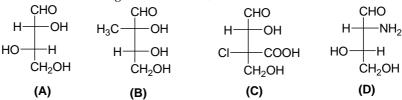
c.

Et Et

Et



L-configuration in the following set of molecules, are



- **a.** A & B
- c. A & D

- **b.** B & C d. B&D
- Which of the following statement is not correct.
 - a. An p-alcohol is oxidised to aldehyde
 - **c.** Ketones on reduction can give a s-alcohol.
- **b.** Carboxylic acids on oxidation give ketones.
- d. A carboxylic acid on reduction can produce a p-alcohol.
- Which of the following is a **reducing** agent?
 - a. H₂O₂
 - c. PCC

- **b.** Na in ethanol
- \mathbf{d} . MnO₂
- Bouveault-Blanc reduction involves conversion of
 - a. Acid to alcohol
 - c. Ester to alcohol

- **b.** Acid chloride to aldehyde
- d. Acid chloride to alcohol
- Wulff- Kishner reduction uses the reducing agent
 - a. Na/C₂H₅OH
 - c. NaOH and NH₂NH₂

- b. Zn(Hg)/HCl
- d. AgNO₃/NH₄OH

10. The following reduction reaction

$$\begin{array}{c} O \\ R \\ \hline \\ CI \end{array} \xrightarrow{Pd\text{-BaSO}_4} \begin{array}{c} O \\ R \\ \end{array} + \begin{array}{c} HCI \\ \end{array}$$

- 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.

- a. Na in EtOH

c. LiAlH₄

- b. NaBH₄
- d. PCC
- Benzaldehyde when treated with NH₂NH₂ and NaOH will produce.
 - a. Benzyl alcohol
 - c. Ethyl benzene

- b. Toluene
- d. None of these
- The solution which is used to detect the presence of aldehyde or ketone is
 - a. 2,4-dinitrophenylhydarzine

b. Benzene solution

c. Tollens reagent

d. None of these

14. The compound which reacts with hydroxylamine but doesn't reacts with Tollens reagent is

a. CH₃CH₃

b. HCHO

c. CH₃CH₂OH

d. CH₃COCH₃

15. Methanal (HCHO) reacts with NaOH solution to form-

a. Methanol

b. Sodium methanoate

c. Both and CH₃OH and HCOONa

d. None

16. Aldehyde are----reactive than ketone towards nuclephilic addition reaction.

a. More

b. Less

c. Equally

d. None of these

17. Reaction of alkene with OsO₄ results in the formation of -

a. trans diol

b. Cis diol

c. Epoxide

d. None of these

18. Which of the following compounds when treated with Br₂ water or KMnO₄ solution **would not** be able to decolorize their colour-

a. Cyclohexene

b. Butene

c. Benzene

d. Hexene

19. Write the product of the following chemical transformations-

$$CH_3$$
 O_3 O_3 O_3 O_3 O_3 O_3 O_4 O_5 O_5 O_7 O_8 O_8

a. A= Ozonide; B= two aldehyde

b. A= Ozonide; B and C are two different aldehyde

 ${f c.}$ Epoxide and two alcohols

d. A= Ozonide ; A= aldehyde B= ketone

20. What type of reaction takes place upon treatment of a ketone with HCN to form a cyanohydrin?

a. Nucleophilic addition

b. Nucleophilic substitution

c. Electrophilic addition

d. Electrophilic substitution

-- --- -

PART-B: Descriptive

Time: 2 hrs. 40 min. Marks: 50

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

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

$$CH_3$$
 $CI \longrightarrow H$
 $H \longrightarrow BI$
 CH_3

b.Write notes on Wulff-kishner reduction.

3. Write down the structures of the products/reagent A, B, C, D and E in the following reactions. $2\times5=10$

(a)
$$C_6H_5$$
-CH=CH-CHO NaBH₄ A

(b) C_6H_5 -CH₂-CH₂-C-CH₃ LiAlH₄ ether

(c) Ph

(d) C_2H_5 Na / EtOH

(main product)

(e) C_2H_5 (i) KMnO₄/Na₂CO₃
(ii) H₃O⁺

(e) C_2H_5 E

4

- **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.
 - **b.**Methyl group in methyl cyclohexane can exist in axial or equatorial bond. Which form is more stable and why.
 - **c.**Convert the following structures:

- **5. a.** What is the difference between conformations and configurations of molecules? Illustrate with examples.
 - **b.**Discuss in details with possible reagents, oxidation of different classes of alcohols.
 - **c.** Write notes on reduction of aromatic nitro compounds.
- 6. a.What happen when acetone is treated with (i) NaHSO₃ (ii) NH₂OH and (iii) NH₃?
 - b. Write the product of the following reaction-

$$\begin{array}{c}
O \\
\hline
1. C_2H_5NH_2 \\
\hline
2. H_3O^{\oplus}
\end{array}
?$$

5

3

3

4

3

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

(iii)
$$\frac{\mathsf{KMnO_4}}{\mathsf{Cold},\mathsf{OH}} ?$$

- **b.** Why alkynes less reactive than alkenes towards electrophilic addition reaction?
- c. How could you distinguish between aldehyde and ketone?
- 8. a. Write the name of the intermediate involves in-

Explain with chemical equation.

- a. Markonicovs addition (ii) Anti-Markonicovs addition
- **b.** Write short notes on-
 - (i) Simple aldol condensation and cross aldol condensation
 - (ii) Cannizaro reaction.
- **c.** What happen when a ketone is treated with Grignard reagent followed by hydrolysis in presence of an acid?

, , , ,

2

3

5

2