



# INDIAN SCHOOL MUSCAT SECOND PERIODIC TEST

#### **CHEMISTRY**

CLASS: XII

Sub. Code: 043

Time Allotted: 50mts.

01.06.2022

Max. Marks: 20

#### **GENERAL INSTRUCTIONS:**

- a. All questions are compulsory.
- b. Mark for each question is indicated against the question.

#### MULTIPLE CHOICE QUESTIONS

The reagent that will convert carboxylic acid to alcohol is 1.

1

- (a) Cu at 573K
- (b) LiAlH<sub>4</sub> (c) PCC (d) NaBH<sub>4</sub>
- 2. Which of the following cannot be cleaved by HI

1

- (a) Phenetole
- (b) Diphenylether
- (c) Di-tert-butylether
- (d) Dicyclohexyl ether
- 3. Aniline on diazotization followed by hydrolysis gives

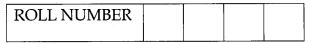
1

- (a) Benzene (b) Chlorobenzene (c) Bromobenzene
- (d) Phenol

## II. In the following questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is *not* the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement

| 4.   | Assertion: Cresols have lower pKa value than that of phenols.  Reason: In cresols the presence of electron withdrawing group increases the acidic strength.  | 1 |
|------|--|---|
| 5.   | Assertion: Bond angle in ethers is slightly less than the tetrahedral angle.  Reason: The steric repulsion between the alkyl groups in ethers is stronger than that of lone pair —lone pair repulsion. | 1 |
| FILL | IN THE BLANKS  |   |
| 6.   | The major product formed on mononitration of phenyl ethanoate is   | 1 |
| 7.   | The reaction of propanone with methyl magnesium bromide followed by hydrolysis gives   | 1 |
| ANSV | WER THE FOLLOWING QUESTIONS  |   |
| 8.   | Write the IUPAC name of ethyl sec-butyl ether  | 1 |
| 9.   | Write equation to show how would you synthesise 2-phenylethanol from a suitable alkene.  | 1 |
| 10.  | Give a chemical test to distinguish between ethanol and phenol.  | 1 |
| 11.  | Illustrate Kolbe's reaction.   | 1 |
| 12.  | Explain the following:   | 2 |
|      | <ul><li>(a) Bimolecular dehydration is not appropriate to prepare ethers with secondary and tertiary alkyl groups.</li><li>(b) o-nitrophenol is more acidic than o-methoxyphenol</li></ul>             |   |
| 13.  | Write the major product(s) in the following:   | 2 |
|      | <ul> <li>(a) C<sub>6</sub>H<sub>5</sub>OC<sub>2</sub>H<sub>5</sub> + HI →</li> <li>(b) Phenol is treated with CH<sub>3</sub>COCl in the presence of pyridine.</li> </ul>                               |   |
| 14.  | Convert the following:   | 2 |
|      | <ul><li>(a) Methanal to propan-1-ol</li><li>(b) Phenol to 2,4,6-tribromophenol</li></ul>   |   |
| 15.  | Write the mechanism of acid dehydration of ethanol at 443 K.   | 3 |
|      | END OF THE QUESTION PAPER  |   |





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#### MULTIPLE CHOICE QUESTIONS

- 1 Which one of the following alcohols is expected to have the lowest pKa value? 1.
  - (a) Ethanol

- (b) tert-butyl alcohol
- (c) isopropyl alcohol
- (d) isobutyl alcohol
- 2. Which among the following produces violet color when treated with neutral ferric chloride?
  - 1

- (a) 2-Methylpropan-2-ol (b) Ethanol (c) Phenol
- (d) Propan-2-ol
- The compound CH<sub>3</sub>COCH<sub>2</sub>COOH when treated with NaBH<sub>4</sub> will give 3.

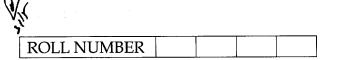
1

- (a) CH<sub>3</sub>CH(OH)CH<sub>2</sub>CH<sub>2</sub>OH
- (b) CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>OH
- (c) CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>COOH
- (d) CH<sub>3</sub>CH(OH)CH<sub>2</sub>COOH

### II. In the following questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

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- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement

| 4.   | Reason: —OH group in phenol is ortho-para directing.   | • |
|------|--|---|
| 5.   | Assertion: Bond angle in alcohols is slightly less than the tetrahedral angle.  Reason: The lone pair lone pair repulsions are stronger than lone pair bond pair repulsions.           | 1 |
| FILL | IN THE BLANKS  |   |
| 6.   | The major product(s) formed on mononitration of 3-methyl phenol is   | 1 |
| 7.   | The reaction of propanal with methyl magnesium bromide followed by hydrolysis gives  | 1 |
| ANS  | WER THE FOLLOWING QUESTIONS  |   |
| 8.   | Write the IUPAC name of isooctyl phenyl ether  | 1 |
| 9.   | Write equation to show how would you synthesise 2-phenylethanol from a suitable alkyl halide   | 1 |
| 10.  | Give a chemical test to distinguish between propan-2-ol and 2-Methylpropan-2-ol.   | 1 |
| 11.  | Illustrate Williamson synthesis using a suitable example   | 1 |
| 12.  | Explain the following:  (a) Alcohols have much higher boiling points than ethers of similar molar mass.  (b) Commercially, acids are converted to esters and then reduced to alcohols. | 2 |
| 13.  | Write equations to show what happens when phenol is treated with   | 2 |
|      | <ul><li>(a) Acidified sodium dichromate</li><li>(b) CH<sub>3</sub>COCl/Pyridine.</li></ul>   |   |
| 14.  | Effect the following conversions:  (a) Aniline to phenol  (b) Anisole to 4-Methoxytoluene  | 2 |
| 15.  | Write the mechanism of acid catalyzed dehydration of ethanol at 413 K  | 3 |
|      | END OF THE QUESTION PAPER  |   |





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#### MULTIPLE CHOICE QUESTIONS

What is the correct order of reactivity of alcohols in the following reaction? 1.

R-OH + HCl ZnCl<sub>2</sub> R-Cl + H<sub>2</sub>O

- (a)  $1^{\circ} > 2^{\circ} > 3^{\circ}$  (b)  $1^{\circ} < 2^{\circ} > 3^{\circ}$
- (c)  $3^{\circ} > 2^{\circ} > 1^{\circ}$
- (d)  $3^{\circ} > 1^{\circ} > 2^{\circ}$
- 2. Reaction of 3-methylbutan-2-ol with HBr would give

1

1

- (a) 2-Bromo-3-methylbutane
- (b) 2-Bromo-2-methylbutane
- (c) 2-Methylbut-1-ene
- (d) 2-Methylbut-2-ene
- 3. Which of the following cannot be cleaved by HI

1

- (a) Phenetole
- (b) Diphenylether
- (c) Di-tert-butylether
- (d) Dicyclohexyl ether

### II. In the following questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
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- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D Assertion (A) is incorrect, but Reason (R) is correct statement

| 4.   | Assertion: In aryl alkyl ethers the alkoxy group activates the benzene ring towards electrophilic substitution.  | 1 |
|------|--|---|
|      | Reason: It directs the incoming electrophiles to ortho and para positions in benzene ring  |   |
| 5.   | Assertion: o- and p-nitrophenols can be separated by steam distillation.   | 1 |
|      | Reason: para-isomer is steam volatile whereas ortho isomer is non-volatile in steam  |   |
| FILL | IN THE BLANKS  |   |
| 6.   | The major product formed on monobromination of phenyl ethanoate is   | 1 |
| 7.   | The reaction of ethanal with isopropyl magnesium bromide followed by hydrolysis gives  | 1 |
| ANS  | WER THE FOLLOWING QUESTIONS  |   |
| 8.   | Write the IUPAC name of benzyl phenyl ether  | 1 |
| 9.   | Write equation to show how would you synthesise 1-phenylethanol from a suitable alkene.  | 1 |
| 10.  | Give a chemical test to distinguish between phenol and cyclohexanol.   | 1 |
| 11.  | Illustrate Reimer-Tiemann reaction.  | 1 |
| 12.  | <ul> <li>Explain the following:</li> <li>(a) Alcohols are highly soluble in water whereas hydrocarbons of comparable molecular mass are almost insoluble.</li> <li>(b) Bimolecular dehydration is not appropriate to prepare ethers with secondary and tertiary alkyl groups.</li> </ul> | 2 |
| 13.  | Give equations of the following reactions:  (a) Benzyl alcohol is treated with alkaline KMnO <sub>4</sub> solution followed by acidification.  (b) Phenol is treated with CH <sub>3</sub> COCl in the presence of pyridine.  | 2 |
| 14.  | Convert the following:  (a) Propanone to tert-butyl alcohol.  (b) Benzene to phenol.   | 2 |
| 15.  | Write the mechanism of acidic dehydration ethanol at 413 K   | 3 |

# END OF THE QUESTION PAPER