SET A

INDIAN SCHOOL MUSCAT

SECOND PERIODIC TEST

CHEMISTRY

CLASS: XI Sub.Code: 043 Time Allotted: 50mts.

15.11.2023 Max .Marks: 20

Roll no..... Name of the Student..... sec.....

GENERAL INSTRUCTIONS:

a) All questions are compulsory.

b) Mark for each question is indicated against the question.

1. Which of the following chemical species is most stable? 1

   (a) O_2 (b) O^{2+} (c) O^{2-} (d) O_2^{2-}

2. Which one of the following species does not exist? 1

   a) Be_2^+ b) Be_2 c) B_2 d) N_2

3. In which substance does bromine have the oxidation state of +1? 1

   a) Br_2 b) HBr c) HBrO d) $HBrO_2$

4. Which is the correct Stock representation for $HAuCl_4$ 1

   a) $HAu(I)Cl_4$ b) $HAu(IV)Cl_4$ c) $HAu(III)Cl_4$ d) $HAu(V)Cl_4$

5. Which of the following is not a redox reaction? 1

   (a) $CaCO_3 \rightarrow CaO + CO_2$

   (b) $O_2 + 2H_2 \rightarrow 2H_2O$

   (c) $Na + H_2O \rightarrow NaOH + \frac{1}{2} H_2$

   (d) $MnCl_3 \rightarrow MnCl_2 + \frac{1}{2} Cl_2$

The following questions (Q.No 6 & Q.No. 7) consist of two statements – Assertion (A) and Reason (R). Choose the correct answer out of the following choices.

(a) Assertion and reason both are correct and reason is the correct explanation for assertion.

(b) Assertion and reason both are correct but reason is not the correct explanation for assertion.

(c) Assertion is correct but reason is wrong.

(d) Assertion is wrong but reason is correct

(e) Both assertion and reason are wrong

6. Assertion: In the reaction $2Na + Cl_2 \rightarrow 2NaCl$, Na is oxidized. 1

   Reason: Chlorine acts as a reducing agent.

7. Assertion: Substances with hydrogen bonding tend to have unusually low boiling points. 1
   Reason: Extra energy is necessary to break the hydrogen bonds.

8. Calculate the bond order for peroxide ion O_2^{2-}. 1

9. Which is expected to have highest boiling point NH_3 or PH_3 and why? 1

10. In the reaction, identity the oxidant and the reductant 1

    $Cu + HNO_{3(dil)} \rightarrow Cu(NO_3)_2 + H_2O + NO$

11. Define Oxidation Number. 1

12. On the basis of molecular orbital theory, write the electronic configuration, calculate the bond order and predict the magnetic property of N_2 molecule. 2

13. Explain the types of H- bonding? Which among them is stronger? 2

14. Displacement reactions of chlorine, bromine and iodine using fluorine are not generally carried out in aqueous solution, why? Justify this statement with an equation. 2

15. Balance the redox reaction using ion – exchange method. 3

    $Fe(OH)_2 + H_2O_2 \longrightarrow Fe(OH)_3 + H_2O$ (in basic medium)

END OF THE QUESTION PAPER

SET B

INDIAN SCHOOL MUSCAT

SECOND PERIODIC TEST

CHEMISTRY

CLASS: XI Sub.Code: 043 Time Allotted: 50mts.

15.11.2023 Max .Marks: 20

Roll no..... Name of the Student..... sec.....

GENERAL INSTRUCTIONS:

a) All questions are compulsory.

b) Mark for each question is indicated against the question.

1. Which one of the following species does not exist? 1

   a) Be_2^+ b) Be_2 c) B_2 d) N_2

2. A paramagnetic molecule among the following is 1

   a) O_2^- b) CN^- c) NO^+ d) CO

3. Combination of atoms A and B that forms an anti – bonding molecular orbital is 1

   a) $\Psi_A{}^2 / \Psi_B{}^2$ b) $\Psi_A{}^2 \times \Psi_B{}^2$ c) $\Psi_A + \Psi_B$ d) $\Psi_A - \Psi_B$

4. In which substance does bromine have the oxidation state of +1? 1

   a) Br_2 b) HBr c) HBrO d) $HBrO_2$

5. In the following disproportionation reaction, which species undergoes simultaneous oxidation and reduction $2H_2O_2 \rightarrow 2H_2O + O_2$ 1

   a) H b) H_2O c) O d) O_2

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(b) Assertion and reason both are correct but reason is not the correct explanation for assertion.

(c) Assertion is correct but reason is wrong.

(d) Assertion is wrong but reason is correct.

(e)Both assertion and reason are wrong.

6. Assertion: In the reaction , $2Na + Cl_2 \rightarrow 2NaCl$, Sodium is oxidized. 1

Reason: Chlorine acts as an oxidizing agent.

7. Assertion: Ortho nitro phenol is more volatile than para nitro phenol. 1

Reason: In ortho nitro phenol, inter molecular hydrogen is present .

8. On the basis of molecular orbital theory write the electronic configuration, calculate the bond order and predict the magnetic property of O_2^- 1

9. What are the two conditions for hydrogen bonding? 1

10. Find the oxidation number of the element underlined. a) $Na_3 \underline{V}O_4$ ii) $\underline{C}H_2Cl_2$ 1

11. Using Stock representation , represent the following compounds 1

a)Tl_2O b)MnO_2

12. Write any 2 difference between bonding and anti-bonding molecular orbitals. 2

13. Displacement reactions of chlorine, bromine and iodine using fluorine are not generally carried out in aqueous solution, why? Justify this statement with an equation. 2

14. Identify the species undergoing oxidation and reduction in the following reactions 2

a) $H_2S_{(g)} + Cl_{2(g)} \longrightarrow 2HCl_{(g)} + S_{(s)}$

b) $3Fe_3O_{4(s)} + 8Al_{(s)} \longrightarrow 9Fe_{(s)} + 4Al_2O_{3(aq)}$

15. Balance the redox reaction using ion – exchange method. 3

$Al + NO_3^- \rightarrow Al(OH)_4^- + NH_3$(in basic medium)

END OF THE QUESTION PAPER

SET C

INDIAN SCHOOL MUSCAT

SECOND PERIODIC TEST

CHEMISTRY

CLASS: XI Sub.Code: 043 Time Allotted: 50mts.

15 .11.2023 Max .Marks: 20

Roll no..... Name of the Student..... sec.....

GENERAL INSTRUCTIONS:

a) All questions are compulsory.

b) Mark for each question is indicated against the question.

1. Which is the correct stock representation of $HAuCl_4$ 1

   a) $HAu(I)Cl_4$ b) $HAu(IV)Cl_4$ c) $HAu(III)Cl_4$ d) $HAu(V)Cl_4$

2. In which of the following substance will hydrogen bond be strongest? 1

   a) HCl b) H_2O c) HI d) H_2S

3. Combination of atoms A and B that forms a bonding molecular orbital is 1

   a) Ψ_A^2 / Ψ_B^2 b) $\Psi_A^2 \times \Psi_B^2$ c) $\Psi_A + \Psi_B$ d) $\Psi_A - \Psi_B$

4. Which of the following is not a redox reaction? 1

   (a) $CaCO_3 \rightarrow CaO + CO_2$

   (b) $O_2 + 2H_2 \rightarrow 2H_2O$

   (c) $Na + H_2O \rightarrow NaOH + \frac{1}{2} H_2$

   (d) $MnCl_3 \rightarrow MnCl_2 + \frac{1}{2} Cl_2$

5. In which substance does bromine have the oxidation state of +1 ? 1

   a) Br_2 b) HBr c) HBrO d) $HBrO_2$

   The following questions (Q.No 6 & Q.No. 7) consist of two statements – Assertion (A) and Reason (R). Choose the correct answer out of the following choices.

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(c) Assertion is correct but reason is wrong.

(d) Assertion is wrong but reason is correct

(e)Both assertion and reason are wrong

6. Assertion: Substances with hydrogen bonding tend to have unusually low boiling points. 1
Reason: Extra energy is necessary to break the hydrogen bonds.

7. Assertion: In a reaction , $Zn_{(s)} + CuSO_{4\,(aq)} \rightarrow ZnSO_{4\,(aq)} + Cu_{(s)}$ 1
Zn is a reductant but itself get oxidized.
Reason: In a redox reaction, oxidant is reduced by accepting electrons and reductant is oxidized by losing electrons.

8. Identify the oxidizing agent and reducing agent in the reaction 1

$$2\,AgBr_{(s)} + C_6H_6O_{2\,(aq)} \longrightarrow 2Ag_{(s)} + 2HBr_{(aq)} + C_6H_4O_{2(aq)}$$

9. Define Oxidation Number. 1

10. Use molecular orbital theory to explain why He_2 molecule does not exist. 1

11. Out of o – nitro phenol and p –nitro phenol which has higher boiling point and why? 1

12. Displacement reactions of chlorine, bromine and iodine using fluorine are not generally carried out in aqueous solution, why? Justify this statement with an equation. 2

13. Identify the species undergoing oxidation and reduction in the following reactions 2

a) $H_2S_{(g)} + Cl_{2\,(g)} \longrightarrow 2HCl_{(g)} + S_{(s)}$

b) $3Fe_3O_{4\,(s)} + 8Al_{(s)} \longrightarrow 9Fe_{(s)} + 4Al_2O_{3(aq)}$

14. Write any 2 difference between bonding and anti-bonding molecular orbitals. 2

15. Balance the redox reaction using ion – exchange method. 3

$P_4 + OH^- \longrightarrow PH_3 + HPO_2^-$ (in basic medium)

END OF THE QUESTION PAPER