CHEMISTRY 1ST PREBOARD EXAMINATION MCQ

SECTION - A

OBJECTIVE TYPE

1. Read the passage given below and answer the following questions: (1x4=4)
Aldehydes and ketones are especially susceptible to nucleophilic addition because carbonyl group is polar. Positive charge on carbonyl carbon makes it reactive towards the nucleophile addition reaction. This addition is catalyzed by acid. Greater the electron deficiency at carbonyl carbon greater is nucleophilic addition reactivity. Thus –I groups increase while +I groups decrease reactivity of carbonyl compound.
The following questions are multiple choice questions. Choose the most appropriate answer:

i) Which of the following is most reactive to give nucleophilic addition? a) FCH_2CHO b) $ClCH_2CHO$ c) $BrCH_2CHO$ d) ICH_2CHO 1 point

- (●) a
- ( ) b
- ( ) c
- ( ) d

Clear selection

ii) Carbonyl compounds show nucleophilic addition with a) HCN b) NaHSO3 c) CH3 OH +HCl d) All of these 1 point

- a
- b
- c
- d (selected)

Clear selection

iii) Which of the following carbonyl compounds is most polar? a) Acetone b) Butanone c) Ethanal d) Methanal 1 point

- a
- b
- c
- d

iv) Select the least reactive carbonyl compound for nucleophilic addition reaction. a) Benzophenone b) Acetophenone c) Benzaldehyde d) Ethanal 1 point

- a
- b
- c (selected)
- d

Clear selection

OR question of iv Which among the following isomeric compounds is most reactive? a) Pentanal b) Pentan-2-one c) Pentan-3-one d) all are equally reactive 1 point

- a
- b
- c
- d

2. Read the passage given below and answer the following questions: (1x4=4)
Only the surface atoms in an adsorbent play an active role in adsorption. These atoms possess some residual forces like vander waals forces and chemical forces. In the process of adsorption weak adsorbate is substituted by strong adsorbate. Activated charcoal used in gas mask is already exposed to atmospheric air, so the gases and water vapours are adsorbed on its surface. When the mask is exposed to chlorine atmosphere, the gases are displaced by chlorine. Porous and finely powdered solids e.g charcoal and Fuller's earth adsorb more as compared to the hard non-porous material. It is due to this property that the powdered charcoal is used in gas masks. In general easily liquefiable gases llike CO_2, NH_3,Cl_2,SO_2 etc are adsorbed to a greater extent than the elemental gases e.g H_2,O_2,N_2,He etc.

(In these questions (Q. No i-iv, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.
a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
c) Assertion is correct statement but reason is wrong statement.
d) Assertion is wrong statement but reason is correct statement.)

i)Assertion- Gas masks work on the principle of both physical and chemical adsorption Reason- Gas masks are used in wars 1 point

- ○ a
- ◉ b
- ○ c
- ○ d

Clear selection

ii) Assertion-SO2 will be more easily adsorbed Reason- SO2 is a polar molecule with high dipolar interaction among molecules. 1 point

- ◉ a
- ○ b
- ○ c
- ○ d

Clear selection

iii) Assertion -Gas mask contains calcium carbonate. Reason- A modern mask typically is constructed of an elastic polymer in various sizes. 1 point

- ○ a
- ◉ b
- ○ c
- ○ d

Clear selection

OR of iii Assertion -H2O has more enthalpy of physisorption as compared to H2in a gas mask. Reason- H2 is easily adsorbed on gas masks than H2O. 1 point

- a
- b
- c
- d

Clear selection

iv) Assertion-Cl2 can easily substitute adsorbed O2. Reason- Cl2 is more easily liquefiable than O2. 1 point

- a
- b
- c
- d

Clear selection

Following questions (No. 3 -11) are multiple choice questions carrying 1 mark each:

3. Glucose when reduced with HI produce a) n-hexane b) n-heptane c) n-octane d) iso-hexane 1 point

- (●) a
- ( ) b
- ( ) c
- ( ) d

Clear selection

Or of 3 α-D (+) glucose and β-D (+) – glucose are (a) Enantiomers (b) Geometrical isomers (c) Anomers (d) Epimers 1 point

- ( ) a
- ( ) b
- ( ) c
- ( ) d

4. When mercuric iodide is added to aqueous potassium iodide a) Freezing point is raised b) Freezing point is lowered c) Freezing point does not change d) boiling point does not change 1 point

- (●) a
- ( ) b
- ( ) c
- ( ) d

Clear selection

5. The no of tetrahedral voids in the cell of a face-centred cubic lattice of similar atoms is a) 4 b) 6 c) 8 d) 12 1 point

- a
- b
- c
- d

Clear selection

6. Given: (i) Cu2+ + 2e− → Cu, Eo = 0.337 V (ii) Cu2+ + e− → Cu+, Eo = 0.153 V Electrode potential, Eo for the reaction, Cu + + e− → Cu, will be: (a) 0.90 V (b) 0.30 V (c) 0.38 V (d) 0.52 V 1 point

- a
- b
- c
- d

Clear selection

7. Which of the following statements about interstitial compounds is incorrect? a) They retain metallic conductivity. b) They are chemically reactive. c) They are very hard. d) They have high melting points, higher than those of pure metals. 1 point

- a
- b
- c
- d

Clear selection

8. A transition metal exists in its highest oxidation state. It is expected to behave as a) A chelating agent b) A central atom in a complex c) An oxidizing agent d) A reducing agent 1 point

- a
- b
- c
- d

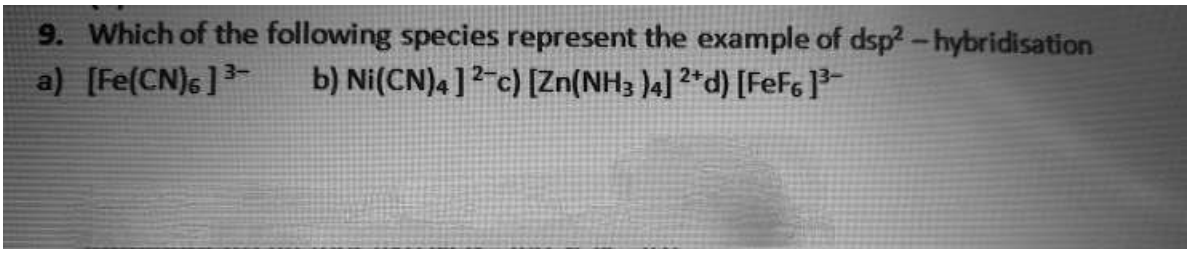
Clear selection

OR of 8 Transition elements form alloys easily because they have (a) Same atomic number (b) Same electronic configuration (c) Nearly same atomic size (d) None of the above 1 point

- a
- b
- c
- d

9

1 point

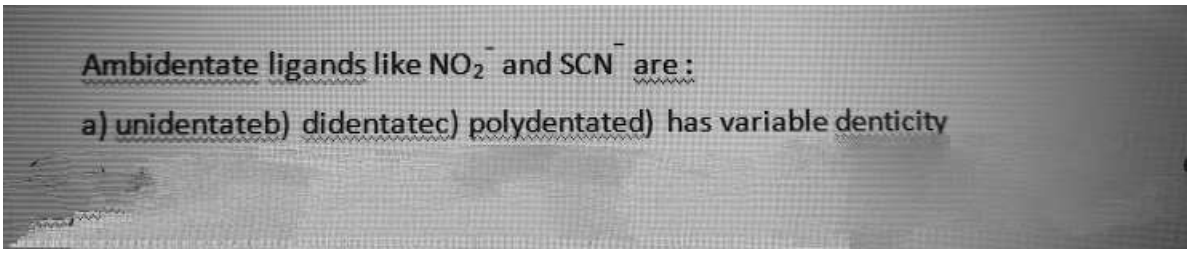


- a
- b
- c
- d

Clear selection

or 0f 9

1 point



- a
- b
- c
- d

Clear selection

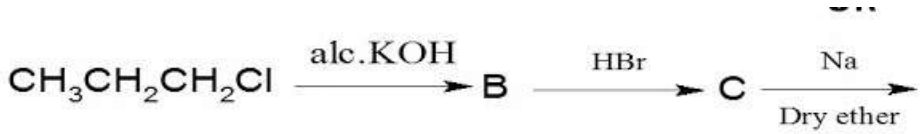
10. The reaction of toluene with Cl2 in presence of FeCl3 gives X and reaction in presence of light gives Y. Thus X and Y are a) X = Benzyl chloride, Y = m-Chlorotoluene b) X = Benzal chloride, Y = o-Chlorotoluene c) X = m-Chlorotoluene, Y = p-Chlorotoluene d) X = o- and p-Chlorotoluene, Y = Benzyl chloride

1 point

- ○ a
- ○ b
- ○ c
- ◉ d

Clear selection

OR of 10 1 point



In the above reaction, the product D is
(a) Propane
(b) 2,3-Dimethylbutane
(c) Hexane
(d) Allyl bromide

- a
- b
- c
- d

Clear selection

11. The correct sequence of reaction to be performed to convert benzene into m-bromoaniline is a) Nitration, reduction, bromination b) Bromination, Nitration, reduction, c) Nitration, bromination, reduction d) Reduction , Nitration, , bromination 1 point

- a
- b
- c
- d

Clear selection

In the following questions (Q. No. 12 - 16) a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
c) Assertion is correct statement but reason is wrong statement.
d) Assertion is wrong statement but reason is correct statement.

12. Assertion – Fructose reduces Fehling solution and Tollen's reagent Reason – Fructose does not contain any aldehyde group. 1 point

- ○ a
- ◉ b
- ○ c
- ○ d

Clear selection

13. Assertion – The pKa of acetic acid is lower than that of phenol. Reason – Phenoxide ion is more resonance stabilized than acetate ion. 1 point

- ○ a
- ○ b
- ◉ c
- ○ d

Clear selection

14. Assertion – Benzene diazonium chloride on boiling with water gives phenol. Reason – C-N is polar. 1 point

- ○ a
- ◉ b
- ○ c
- ○ d

Clear selection

15. Assertion – Ozone is a powerful oxidizing agent in comparison to O2. Reason- Ozone is diamagnetic but O2 is paramagnetic. 1 point

- ○ a
- ◉ b
- ○ c
- ○ d

Clear selection

16. Assertion- Chloroform and acetone forms a solution with negative deviation from Raoult's law Reason- Chloroform molecule is able to form hydrogen bond with acetone molecule, so, the intermolecular attractive forces between chloroform - chloroform and acetone - acetone are weaker than those between chloroform – acetone. 1 point

- ◉ a
- ○ b
- ○ c
- ○ d

Clear selection

OR OF 16 Assertion- When methyl alcohol is added to water, the boiling point of water increases. Reason - When a non-volatile solute is added to a volatile solvent elevation in the boiling point is observed. 1 point

- ○ a
- ○ b
- ○ c
- ◉ d

Clear selection

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