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PREBOARD EXAMINATION (2019-2020)

GRADE:XII CBSE
SET-B

TOTAL MARKS: 70

CHEMISTRY

DATE: _____

TIME: 3 Hrs.

GENERAL INSTRUCTIONS

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(a) All questions are compulsory.
(b) Section A: Q.no. 1 to 20 are very short answer questions and carry 1 mark each.
(c) Section B: Q.no. 21 to 27 are short answer questions and carry 2 marks each.
(d) Section C: Q.no. 28 to 34 are also short answer questions and carry 3 marks each.
(e) Section D: Q.no. 35 to 37 are long answer questions and carry 5 marks each.
(f)There is no overall choice. However an internal choice has been provided in two questions of two marks, two questions of three marks and all the three questions of five marks weightage.You have to attempt only one of the choices in such questions.
(g) Use of log tables if necessary, use of calculators is not allowed.

Read the given passage and answer the questions 1 to 5 that follow:

Grignard reagents are versatile organometallic compound in which carbon-magnesium has significant ionic character.The hydrocarbon part of Griganrd reagent acts as a source of carbanions.Therefore ,it readily undergo nucleophilic addition reactions to aldehydes,ketones ,esters,nitrites forming the addition product which upon hydrolysis gives alcohol and other compounds.Grignard reagent on reaction with H_2O and alcohol gives hydrocarbon.

1.Write the reaction involved in preparation of benzyl alcohol from methanol.

2.How 2-methylpropan-2-ol can be prepared from propanone.

3.What will the product formed when benzyl magnesium bromide is treated with ethanol.

4.Write product formed on reaction between ethylformate and excess of CH_3MgBr followed by hydrolysis.

5.Write reaction sequence for preparation of propan-1-ol from bromoethane.

Questions 6 to 10 are one word answers

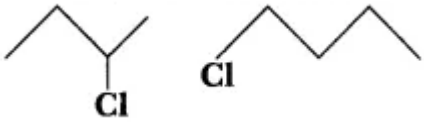
6.Write the dispersed phase and dispersion medium of paints**.**

7. How does ZnO appear on heating?

8.Out of chlorobenzene and cyclohexylchloride ,which one is more reactive towards nucleophilic substitution reaction.

9. Write the name of enzyme used in hydrolysis of lactose.

10.Identify the chiral molecule in the following pair:



Questions 11 to 15 are multiple choice questions

11. Which one of the following is a disaccharide?:
(i) starch (ii) maltose (iii) fructose (iv) glucose

12. On addition of conc.H_2SO_4 to a chloride salt ,colourless fumes are evolved but in case of iodide salt,violet fumes come out.This is because
(i) H_2SO_4 reduces HI to I_2 (ii) HI is of violet colour
(iii) HI gets oxidised to I_2 (iv) HI changes to HIO_3
.

13. Common impurities present in bauxite ore are
(i) CuO (ii) ZnO (iii) MnO_2 (iv) Fe_2O_3

14.The polyhalogenated compound chloroform is not preferred to use as anaesthetic nowadays.
(i) it oxidizes to phosgene gas.
(ii) it forms HCl gas on oxidation
(iii) dissolves soft tissues of nose
(iv) damage vision of patient.

15.Which of the arrangements are correct for boiling point of 16^{th} group hydride?
(i) $H_2S < H_2Se < H_2Te < H_2O$
(ii) $H_2O < H_2S < H_2Se < H_2Te$
(iii) $H_2S < H_2Se < H_2O < H_2Te$
(iv) $H_2Te < H_2S < H_2Se < H_2O$

Questions 16 to 20

(A) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
(B) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
(C) Assertion is correct, but reason is wrong statement.
(D) Assertion is wrong, but reason is correct statement.

16. **Assertion:**The boiling points of alkyl halides decrease in order RI > RBr > RCl > RF

Reason : The boiling point of alkyl chlorides, bromides and iodides are considerably higher than that of the hydrocarbon of comparable molecular mass.

17. **Assertion:** p-nitrophenol is more acidic than phenol

Reason : Nitro group helps in the stabilisation of the phenoxide ion by dispersal of negative charge due to resonance .

18. **Assertion :** Vitamin D can be stored in our body

Reason : Vitamin D is a fat soluble vitamin

19. **Assertion :** Coagulation power of Al^{3+} is more than Na^{+}

Reason : Greater the valency of the flocculating ion added, greater is its power to cause precipitation

20. **Assertion :** Cu^{2+} oxide is not known

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Reason : Cu^{2+} oxidizes I^{-} to iodine

SECTION-B

21. Describe Hinsberg method for the identification of primary ,secondary and tertiary amines. Also write the chemical equations involved .

22. When $FeCr_2O_4$ is fused with Na_2CO_3 in the presence of air it gives a yellow solution of compound (A).Compound (A) on acidification give compound (B).Compound (B) on reaction with KCl forms an orange colour compound (C)..Compound (C) oxidises Na_2SO_3 to compound (D).Identify A , B, C and D.

23. Write balanced chemical equation for the following processes.
(i) Cl_2 is passed through slaked lime.
(ii) SO_2 gas is passed through an aqueous solution of Fe(III) salt

.OR

(i) Write two poisonous gases prepared from chlorine gas
(ii) Why does Cu^{2+} solution give blue colour on reaction with ammonia?

24. Define the following terms with suitable example.
(i) Polydentate ligand
(ii) Homolyptic complex

OR

(i) Using IUPAC norms write the formula for following complexes
(a) Potassium tri(oxalato)chromate (III)
(b) Hexaaquamanganese (II) sulphate

25. (i) Although both $[NiCl_4]^{2-}$ and $[Ni(CO)_4]$ have sp^3 hybridisation yet $[NiCl_4]^{2-}$ is paramagnetic and $[Ni(CO)_4]$ is diamagnetic .Give reason.
(atomic number of Ni is 28)
(ii) Write the electronic configuration of d^5 on the basis of crystal field theory when
(a) $\Delta o < P$ (b) $\Delta o > P$

26. Write structures of main compound A and B in the following reactions

(i) $CH_3CH_2OH \xrightarrow{PCC} A \xrightarrow{CH_3OH/dryHCl(g)} B$

(ii) $C_6H_5COCH_3 \xrightarrow{NaOI} A + B$

27.The following data were obtained for the reaction :

$A + 2B \rightarrow C$

Experiment	[A]/M	[B]/M	Initial rate of formation of C/M min-1
1	0.2	0.3	4.2x10-2
2	0.1	0.1	6.0x10-3
3	0.4	0.3	1.68x10-1
4	0.1	0.4	2.40x10-2

(i) Find the order of reaction with respect to A and B
(ii) Write the rate law of overall order of reaction.
(iii) Calculate the rate constant (k)

SECTION-C

28.(i)Write the dispersed phase and dispersion medium of butter
(ii)Why does physisorption decrease with increase in temperature?
(iii) Draw the structure of (a) XeF_2 (b) $H_4P_2O_7$

29.(i) What do you understand by depression of freezing point? Derive the relationship between depression of freezing point and molar mass of the solute.
(ii) Why do gases always tend to be less soluble in liquids as the temperature is raised?
(iii) Why does a solution containing non-volatile solute have higher boiling point than the pure solvent?

31. (i) Why does PCl_5 fume in moisture?
(ii) Write the name of the allotrope of sulphur which is stable at room temperature.
(iii) Chlorine water on standing loses its yellow colour. Why?

OR

(i) Write the structures of the following:
(a) $H_2S_2O_7$ (b) XeO_3
(ii) Which allotrope of phosphorus is more reactive and why?

32. How do you convert the following:
(i) ethyl chloride is treated with NaI in the presence of acetone,
(ii) chlorobenzene is treated with Na metal in the presence of dry ether,
(iii) methyl chloride is treated with KNO_2?
Write chemical equations in support of your answer.

33.Illustrate the following reactions giving suitable example in each case:
(a) Ammonolysis
(b) Coupling reaction
(c) Acetylation of amines

34.(i) Write structures and IUPAC names of monomers of the following polymers:
(a) Buna-S
(b) Nylon-6, 6.

(ii) Define the term, 'homopolymerisation' giving an example.

OR

(i) Define thermoplastic and thermosetting polymers. Give one example of each.

(ii) What is a biodegradable polymer? Give an example of a biodegradable aliphatic polyester.

SECTION-D

35.(i) Account for the following:

(a) $Cl—CH_2COOH$ is a stronger acid than CH_3COOH.

(b) Carboxylic acids do not give reactions of carbonyl group.

(ii) Write the chemical equations to illustrate the following name reactions:

(a) Rosenmund reduction (b) Cannizzaro's reaction

(iii) Out of $CH_3CH_2—CO—CH_2—CH_3$ and $CH_3CH_2—CH_2—CO—CH_3$, which gives iodoform test?

OR

(i) Draw the geometrical isomers of complex $[Pt(NH_3)_2Cl_2]$.

(ii) On the basis of crystal field theory, write the electronic configuration for d4 ion if $\Delta 0 < P$.

(iii) Write the hybridization and magnetic behaviour of the complex $[Ni(CO)_4]$.

36. (i) Describe the following giving the relevant chemical equation in each case:

(a) Carbylamine reaction

(b) Hoffmann's bromamide reaction.

(ii) Why is an alkylamine more basic than ammonia?

(iii) Why do primary amines have higher boiling points than the tertiary amines?

OR

(i) State Raoult's law for a solution containing volatile components. Name the solution which follows Raoult's law at all concentrations and temperatures.

(ii) Calculate the boiling point elevation for a solution prepared by adding 10 g of $CaCl_2$ to 200 g of water. (K_b for water = 0.512 K kg mol^{-1}, Molar mass of $CaCl_2$ = 111 g mol^{-1})

37.(i) Calculate the time to deposit 1.5 g of silver at cathode when a current of 1.5 A was passed through the solution of $AgNO_3$. (Molar mass of Ag = 108 g mol^{-1}, 1 F = 96500 C mol^{-1}).

(ii) Accounts for the following:

(a) Rusting of iron is quicker in saline water than in ordinary water.

(b) Blocks of magnesium are straped to the steel hubs of ocean going ships.

OR

(i) Explain what is meant by the following:

(a) peptide linkage

(b) pyranose structure of glucose

(ii) Write the main structural difference between DNA and RNA. Of the four bases, name those which are common to both DNA and RNA.