CHEMISTRY	CHEMISTRY (052) (E)	Set No. 5
	BOARD Q. PAPER-1 (Self Practice)	Standard-12
Time : 3 Hours	AUGUST : 2020	Total Marks : 100

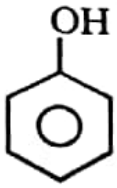
• Part-A : Time 1 hour / Marks 50 • Part-B : Time 2 hour / Marks : 50

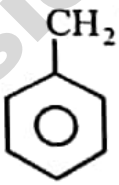
PART-A

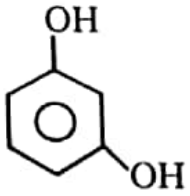
Time : 1 Hour] August : 2020 [Maximum marks : 50

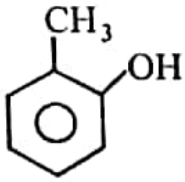
Instruction :
(1) There are total 50 objective type (MCQ) questions in part-A and all questions are compulsory.
(2) The questions are serially numbered from 1 to 50 and each carries 1 mark.
(3) Read each question carefully, select proper option and answer in the OMR Sheet.
(4) The OMR Sheet is given for answering the questions. The answer of each questions is represented by (A) O, (B) O, (C) O, (D) O. Darken the circle ● of the correct answer with ball-pen.
(5) Rough work is to be done in the space provided for this purpose in the Test booklet only.
(6) Set No. of question paper printed on the upper most right side of the question paper is to be written in the column provided in the OMR Sheet.
(7) Use of simple calculator and log table is allowed if required.

1. Which of the following compound does not contain phenolic "–OH" group in it.

(A) 

(B) 

(C) 

(D) 

2. Which carboxylic is present in vinegar?
(A) Benzoic Acid (B) Ethanoic Acid
(C) Methanoic Acid (D) Oxalic Acid

3. Correct basic strength of ethyl substituted amines is aqueous solution is _____.
(A) 2° > 3° > 1° (B) 1° > 2° > 3° (C) 3° > 2° > 1° (D) 3° > 1° > 2°

4. Which of the following protein is water insoluble?
(A) Insulin (B) Myosin (C) Albumin (D) All of the them

5. Polymer used for making of combs and handles of various utensil is _____.
(A) Nylon-2-Nylon-6 (B) Urea-Formaldehyde Resin
(C) Melamine (D) Bakelite

6. Aspartam obtained by the reaction of aspartic acid and phenylalanine shows which type of methyl ester?
(A) dipeptide (B) Glycosidic (C) diester (D) Phosphodieste

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7. When cation of higher oxidation. State is added in Ionic solid substance, then which type of defect is formed in it?
(A) Schottky defect (B) Impurity defect
(C) Frenkel defect (D) Metal Excess defect

8. Which of the following process is responsible for the formation of delta at place where rivers meet the sea?
(A) Coagulation (B) Dialysis (C) Emulsification (D) None

9. In which crystal system, edge length is not $a \neq b \neq c$?
(A) Monoclinic (B) Hexagonal (C) Orthorhombic (D) Triclinic

10. K_B Value for $Ar_{(g)}$, $CO_{2(g)}$, $HCHO_{(g)}$ and CH_{2g} are 40, 39, 1.67, 1.82×10^{-5} and 0.413 respectively. Arrunge these gases in the order of their incrensing solubility.
(A) $HCHO < CH_4 < CO_2 < Ar$ (B) $HCHO < CO_2 < CH_4 < Ar$
(C) $Ar < CO_2 < CH_4 < HCHO$ (D) $Ar < CH_4 < CO_2 < HCHO$

11. The rate constant of a reaction at 500K is 0.02 S^{-1}. Its Activation Energy (E_a) is 18.230 KJ. Calculate Arrhenius constant?
(A) 1.2 (B) 1.4 (C) 1.3 (D) 1.6

12. In Hall-Heroult process for preparation of Aluminium from Al_2O_3, why Na_3AlF_6 is added.
(A) To reduce melting points of Al_2O_3
(B) To protect graphite rod present on anode.
(C) To reduce rate of reaction of Al_2O_3
(D) To obtain Extra Pure Aluminium Metal

13. How many lone pair of electron are present in N_2O_5?
(A) 8 (B) 12 (C) 10 (D) 14

14. Reaction of PCl_3 with which reagent does not produces $POCl_3$ as a product in the reaction?
(A) H_2O (B) CH_3COOH (C) C_2H_2OH (D) SO_2Cl_2

15. Which of the following is a most stable complex compound?
(A) $[Fe(H_2O)_4]^{3+}$ (B) $[Fe(C_2O_4)]^{3-}$ (C) $[Fe(NH_3)_6]^{3+}$ (D) $[FeCl_4]^{3-}$

16. Which of the following complex does not form coloured solution?
(A) $[CoCl(NH_3)_5]^{2+}$ (B) $[Cu(H_2O)_4]^{2+}$ (C) $[Ti(H_3O)_6]^{3+}$ (D) $[Ni(CO)_4]$

17. Which compound is used as fire extinguisher ?
(A) Dichloromethane (B) Tri lodomethane
(C) Trichloromethane (D) Tetrachloromethane

18. Which one would be useful to distinguish between Phenol and Ethanol?
(A) Sodium metal (B) Anhydrous $ZnCl_2$ + Conc. HCl
(C) Neutral $FeCl_3$ (D) All of them

19. Which reagent is useful for the separation of mixture of primary, secondary and tertiary amines?
(A) Hinsberg's reagent (B) Fehling reagent
(C) Etard reagent (D) Tollen's reagent

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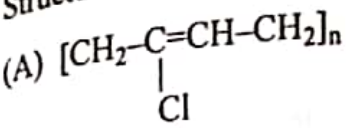
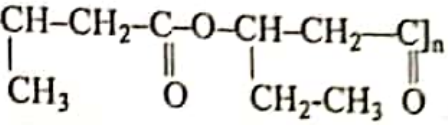
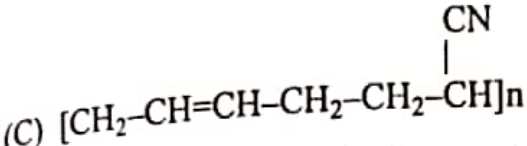
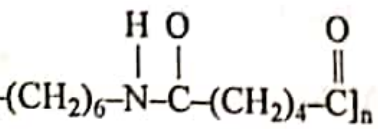
20. Deficiency of which vitamin, increase blood clotting time?
(A) Vitamin-E (B) Vitamin-D (C) Vitamin-K (D) Vitamin-B_{12}

21. Structure of which polymer represents Biodegradable polymer ?
(A) 
(B) 
(C) 
(D) 

22. Antibiotics which are effective against a single organism or disease, are referred as _____.
(A) Broad spectrum antibiotics (B) Limited spectrum antibiotics
(C) Narrow spectrum antiboitics (D) Gram positive antibiotics

23. During the formation of nucleoside, which carbon of sugar gets bonded with base?
(A) 1' (B) 3' (C) 2' (D) 5'

24. Which compound is reacted with Benzene diazonium chloride salt in azo coupling reaction to produce orange dy?
(A) Aniline (B) Phenol
(C) N-Methyl Aniline (D) Chloro Benzene

25. A compound is formed by two elements M and N. The element N forms CCP and atoms of M occupy 1/3rd of tetrahedral voids. What is the formula of the compound?
(A) M_2N_3 (B) M_3N_2 (C) MN (D) M_4N_3

26. Calculcate Molarity (M) for the solution of 0.1 molal (m) NaOH solution whose density is $1.25 g.mL^{-1}$.
(A) 0.135 M (B) 0.125 M (C) 0.129 M (D) 0.100 M

27. $\Lambda^{\circ}_{m}(NH_4OH)$ is equal to _____.
(A) $\Lambda^{\circ}_{m(NH_4OH)} + \Lambda^{\circ}_{m(NH_4Cl)} - \Lambda^{\circ}_{m(HCl)}$
(B) $\Lambda^{\circ}_{m(NH_4Cl)} + \Lambda^{\circ}_{m(NaCl)} - \Lambda^{\circ}_{m(NaOH)}$
(C) $\Lambda^{\circ}_{m(NH_4OH)} + \Lambda^{\circ}_{m(NH_4OH)} - \Lambda^{\circ}_{m(NaCl)}$
(D) $\Lambda^{\circ}_{m(NaOH)} + \Lambda^{\circ}_{m(NaCl)} - \Lambda^{\circ}_{m(NH_4Cl)}$

28. A reaction is second order with respect to a reactant. How is the rate of reaction affected if the concentration of the reactant is reduced to half?
(A) 2 times (B) $\frac{1}{2}$ times (C) 4 times (D) $\frac{1}{4}$ times

29. What is the physical state of dispersion phase and dispersion medium in "Jellies" respectively?
(A) Solid, Solid (B) Liquid, Solid (C) Solid, Liquid (D) Liquid, Liquid

30. Copper matte is a mixture of _____.
(A) $Cu_2O + FeO$ (C) $Cu_2S + CuS$ (C) $Cu_2O + Cu_2S$ (D) $Cu_2S + FeS$

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31. Which of the following statement is true for the formation of Xenon compounds?
(A) both O_2 and Xe have same size
(B) both O_2 and Xe are gases
(C) both O_2 and Xe have same electron gain enthalpy
(D) both O_2 and Xe have First Ionization enthalpy almost same

32. What is the equivalent weight of $K_2Cr_2O_7$ in acidic medium, If its molecular weight is taken as "M".
(A) M (B) $\frac{M}{5}$ (C) $\frac{M}{3}$ (D) $\frac{M}{6}$

33. IUPAC name of $[Co(NH_3)_4(H_2O)Cl]Cl_2$ complex compound is _____.
(A) Tetraammine aquachlorido cobalt (III) chloride
(B) Tetraammine aquachlorido cobaltate (III) chloride
(C) Aquatetraammine chlorido cobalt (III) dichloride
(D) Aquatetraammine chlorido cobalt (III) chloride

34. Reaction of $C_6H_5CH_2Br$ with aqueous sodium hydroxide follows _____.
(A) Nucleophilic (B) S_N2 mechanism
(C) S_N1 mechanism (D) Saytzeff rule

35. Which product is obtained when one mole of ether (R-O-R) is reacted with one mole of HX ?
(A) Only R-X (B) R-X + R-OH (C) Only R-OH (D) 2R-X + H_2O

36. Which type of hydrogen should be present in Aldehyde or Ketone compounds for Aldol condensation reaction?
(A) α (B) γ (C) β (D) δ

37. Which product is obtained when 2 mole of methyl chloride is reacted with methyl amine?
(A) N, N - Dimethylethanamine (B) N - Ethylmethenamine
(C) N - Methylethanamine (D) N, N - Dimethylmethenamine

38. How many Chiral Carbons are present in Fructose?
(A) 1 (B) 3 (C) 2 (D) 4

39. Which of the following polymer is obtained by condensation polymerization?
(A) Nylon-6 (B) Polypropene (C) Orlon (D) Teflon

40. Which drug is used in preventing platelet coagulation?
(A) Zantac (B) Aspirin (C) Phenelzine (D) Bithional

41. An element has a body-centred cubic structure with a cell edge of 4×10^{-4}cm. Calculate diameter of an particle.
(A) 1.73×10^{-8} cm (B) 6.92×10^{-8} cm
(C) 3.46×10^{-8} cm (D) 0.865×10^{-8} cm

42. Which of the following is an example of Ideal solution?
(A) Chloroform - Acetone (B) Water - Nitric Acid
(C) Ethanol - Water (D) Benzene - Toluene

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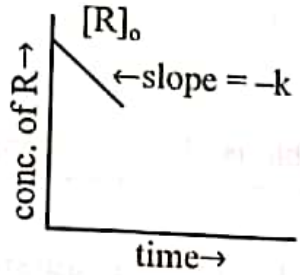
43. Using the data given below. Find out the strongest reducing agent.

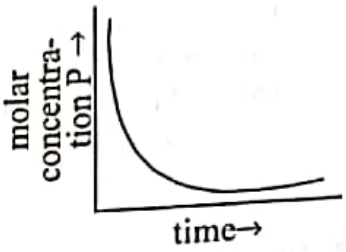
$E^{o}_{Mn^{+4}/Mn^{+2}} = 1.23V$ $E^{o}_{Co^{+3}/Co^{+2}} = 1.81V$

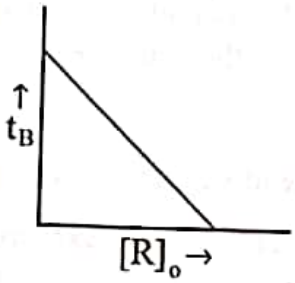
$E^{o}_{Fe^{+2}/Fe} = -0.44V$ $E^{o}_{Pb^{+2}/Pb} = -0.13V$

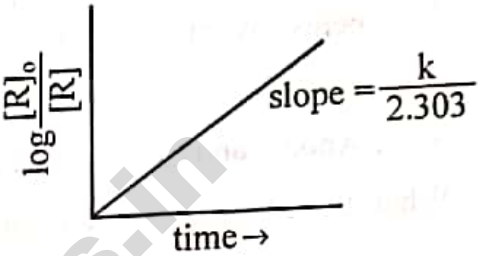
(A) Mn^{+2} (B) Fe (C) Co^{+2} (D) Pb

44. Which of the following graph is correct for a first order reaction?

(A) 

(B) 

(C) 

(D) 

45. On the basis of selectivity, which product is obtained by the reaction of $CO_{(g)}$ with $H_{2(g)}$ in presence of Ni catalyst ?

(A) CH_4 (B) HCHO (C) CH_3OH (D) HCOOH

46. For obtaining high purity of tin metal, which refining process is useful?

(A) Distillation (B) Mond Process (C) Liquation (D) Van Arkel Method

47. Which of the following OXO acid of Halogen is strongest acid?

(A) HOCl (B) $HOClO_2$ (C) HOClO (D) $HOClO_3$

48. Highest oxidation state of manganese in Fluoride (MnF_4) in Mn^{+4} but highest oxidation state in oxides (Mn_2O_7) is Mn^{+7} because _____ .

(A) Fluorine is more electronegative than oxygen

(B) In covalent compounds Fluorine can form single bond only while oxygen forms double bond.

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(C) Fluorine does not possess d-orbitals

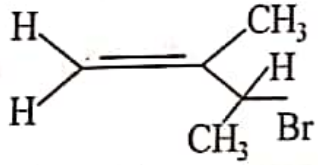
(D) Fluorine stabilizes lower oxidation state

9. Which type of isomerism will be shown by $[Pt(NH_3)_2Cl_2]$?

(A) Geometrical Isomerism (B) Linkage Isomerism

(C) Optical Isomerism (D) Ionisation Isomerism

). IUPAC name of given organic compound is



(A) 2-Bromo-3-methyl But-3-ene (B) 1-Bromo-1,2-dimethyl prop-2-ene

(C) 3-Bromo-2-methyl But-1-ene (D) 3-Bromo-2,3-dimethyl prop-1-ene

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PART-B

Time : 2 Hours] August 2020 : 052 (E) [Maximum marks : 50

Instructions : (1) Write in a clear legible handwriting.
(2) There are three sections in Part-B of the questions paper and total 1 to 18 question are there.
(3) All the questions are compulsory. Internal options are given.
(4) The numbers at right side represent the marks of the question.
(5) Start new section on new page.
(6) Maintain sequence.
(7) Use of simple calculator and log table is allowed, if required.

SECTION-A

❖ **Answer the following Q.No. 1-8 in brief. 2 marks for each question.** 16

1. A solution of $CuSO_4$ is electrolysed for 8 minutes 45 seconds with a current of 5 amperes. What is the mass of copper deposited at the cathode?

OR

Write Anodic and Cathodic reaction for Dry cell and Lead storage cell (discharging).

2. What is meant by pseudo first order reaction? Explain giving example.

OR

A first order reaction takes 40 minutes for 30% decomposition. Calculate $t_{\frac{1}{2}}$.

3. Explain Froth Floatation Method for concentration of ores in metallurgy. (Figure is not necessary).
4. Explain Lanthanoid contraction.
5. Which of the 3d series of the transition metals exhibits the largest number of oxidation states and why?
6. Explain Carbyl Amine Test giving reactions.
7. Prove the presence of Aldehyde group in glucose molecule giving reaction? Write the name of product obtained.
8. State the monomers present in terylene and draw their structures.

SECTION-B

❖ **Answer the following Q.No. 9-14 in detail. 3 marks for each question.** 18

9. Write the reaction mechanism of dehydration of ethanol in presence of acid to form ethene.

OR

Explain Williamson synthesis to prepare ether and state the limitation of the process. State all reactions.

10. Write three chemical reactions for preparation of Alkyl halides from Alcohols. (Indicate byproducts if any).

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11. Explain contact process for preparation of sulphuric acid with reaction. (Figure is not necessary).

12. Classify and explain colloids on the basis "Nature of interaction between dispersed phase and dispersion medium" giving examples. (5)

13. The following results have been obtained during the kinetic studies of the reaction $2A + B \rightarrow C + D$.

Experiment	[A]/mol L^{-1}	[B]/mol L^{-1}	Initial rate of formation of D/mol L^{-1} min^{-1}
I	0.1	0.1	6.0×10^{-3}
II	0.3	0.2	7.2×10^{-2}
III	0.3	0.4	2.88×10^{-1}
IV	0.4	0.1	2.40×10^{-2}

Determine the rate law and the rate constant for the reaction.

14. Derive packing efficiency in face centred cubic close packed structures.

SECTION-C

❖ **Answer the following Q.No. 15-18 essay type questions in detail. 16**
4 marks for each question.

15. An organic compound (A) (molecular formula $C_8H_{16}O_2$) was hydrolysed with dilute sulphuric acid to give a carboxylic acid (B) and an alcohol (C), Oxidation of (C) with chromic acid produced (B). (C) on dehydration gives but-1-ene. Write equations for the reaction involved. State IUPAC name of compound (A).

16. On the basis of valence bond theory state electronic configuration, Hybridization, Magnetic property with calculation of magnetic dipole value and state type of spin present in $[Fe(CN)_6]^{-3}$ complex.

OR

(a) Draw optical and geometrical isomers of $[CoCl_2(en)_2]^+$.

(b) Give evidence that $[Co(NH_3)_5Cl]SO_4$ and $[Co(NH_3)_5(SO)_4]Cl$ are ionisation isomers.

17. (a) Explain corrosion of iron in atmosphere with reactions. (Figure is not necessary).

(b) What is meant by conductivity and resistivity? State their units.

18. Calculate the depression in the Freezing point of water when 10g of $CH_3CH_2CHClCOOH$ is added to 250 g of water.

$K_4 = 1.4 \times 10^{-3}$, $K_f = 1.86$ kg mol^{-1}.

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