STANDARD : 12 SCIENCE • CHEMISTRY

Board Question Papers (Part-1 and Part-2)
with Chapterwise Test : Part-2

BOARD QUESTION PAPER-1
JULY 2018 (052) (E)

Stanard-12
CHEMISTRY
Part-1 & 2

PART-A

Time: 1 Hour]   [Maximum marks : 50

Instructions : (1) There are 50 objective type (M.C.Q) 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 alternative and answer in the O.M.R. sheet.

(4) The OMR sheet is given for answering the questions. The answer of each question is represented by (A) ◯, (B) ◯, (C) ◯, (D) ◯. 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 is allylic halide compound?

   (A) 4 - chloro cyclohex - 1 - ene   (B) 1 - chloro cyclohex - 1 - ene

   (C) 1 - chloro but - 2 - ene   (D) (1 - chloro ethyl) benzene

2. $CCl_4 + SbF_3 \xrightarrow[\text{high pressure}]{SbCl_5}$ this reaction is known as which name?

   (A) Wartz   (B) Swartz   (C) Finkelstein   (D) Grignard

3. Which compound is used as fire extinguisher?

   (A) CH_2Cl_2 (B) CCl_4 (C) $CHCl_3$ (D) DDT

4. In which reaction there is cleavage of C - O bond?

   (A) Oxidation of alcohol   (B) Esterification

   (C) Reaction of alcohol with metal   (D) Reduction of alcohol

5. What is the proportion of sigma (σ) and pi(π) bond in 1, 4 - Benzoquinone?

   (A) 1 : 3   (B) 3 : 2   (C) 3 : 1   (D) 2 : 3

6. Which of the following is symmetrical ether?

   (A) $CH_3 - O - C_2H_5$ (B) $C_6H_5 - O - C_6H_5$
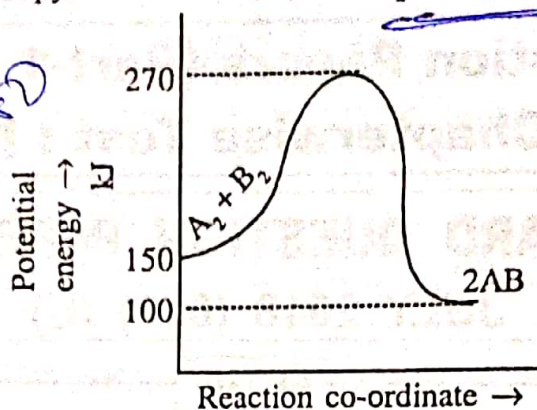
   (C) $C_6H_5 - O - C_2H_5$ (D) $C2\ C_2H_5 - O - C_3H_7$

7. What will be enthalpy of reaction (kJ) for $A_2 + B_2 \rightarrow 2AB$ reaction?

 (A) 120
 (B) 50
 (C) -50
 (D) 170

Potential energy → kJ

270 ---------

$A_2 + B_2$

150

100 --------- 2AB

Reaction co-ordinate →

8. For zero order reaction $t_{1/2} \propto [R]_0$ _____ .

 (A) $[R]_0^2$ (B) $[R]_0^{-1}$ (C) $[R]_0$ (D) $[R]_0^{-2}$

9. What will be the order of reaction if value of rate constant is 1.75×10^{-4} L^2 mole^{-2} sec^{-1} for reaction?

 (A) Second (B) Third (C) First (D) Zeroth

10. $CO + 2H_2 \xrightarrow{X} CH_3OH$ which is catalyst X here?

 (A) $Cu / ZnO - Cr_2O_3$ (B) Cu
 (C) Ni (D) $Ni - ZnO$

11. Electrophoresis is filled with $Zr(OH)_2$ colloidal solution. On passing electric current particles are moving toward which electrode?

 (A) Anode and cathode (B) Cathode
 (C) Anode (D) Do not migrate

12. For coagulation of As_2S_3, which electrolyte has lowest coagulation value?

 (A) K_3PO_4 (B) KCl (C) $BaCl_2$ (D) $FeCl_3$
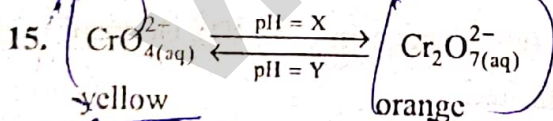
13. Which alloy has marvellous property of memory?

 (A) Nitinol (B) Cupronickel (C) Nichrome (D) Monel metal

14. Which ion has highest theoretical magnetic moment?

 (A) Co^{3+} (B) Cr^{3+} (C) Ti^{3+} (D) Fe^{3+}

15. $CrO_{4(aq)}^{2-} \underset{pH = Y}{\overset{pH = X}{\rightleftharpoons}} Cr_2O_{7(aq)}^{2-}$

 yellow orange

 which are the value of X and Y respectively?

 (A) 6 and 4 (B) 8 and 5 (C) 6 and 8 (D) 7 and 7

16. Which compound is used to produce very low temperature by magnetic effect?

 (A) Gd_2SO_4 (B) $Gd_2(SO_4)_3$ (C) $GdSO_4$ (D) GdS

17. Which is electronic structure of d-orbitals in complex $(NH_4)_2 [CoF_4]$.

 (A) $eg^4 \, t_2g^2$ (B) $t_2g^6 \, eg^1$ (C) $eg^4 \, t_2g^3$ (D) $eg^2 \, t_2g^5$

18. Which aqueous solution of compound contains maximum types of positive ions?

 (A) Potassium dichromate (B) Potassium permangnate
 (C) Potassium ferricyanide (D) Carnalite

19. How many ions are in aqueous solution of ferrous hexacyano ferrate (III).

 (A) 5 (B) 3 (C) 4 (D) 2

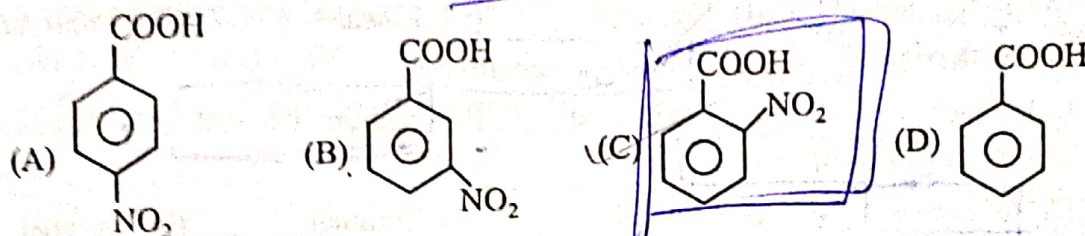20. $R - CN + SnCl_2 + HCl \rightarrow$ product.

Which is the product in above reaction?

(A) Amide   (B) Amine   (C) Imine   (D) Oxime

21. Which compound giving Fehling test?

(A) Acetophenone   (B) Acetone   (C) Benzaldehyde   (D) Glucose

22. Which acid has lowest value of pKa?

(A) [COOH group on benzene ring, NO_2 at para position]

(B) [COOH group on benzene ring, NO_2 at meta position]

(C) [COOH group on benzene ring, NO_2 at ortho position]

(D) [COOH group on benzene ring]

23. Which compound is used as urinary antiseptic?

(A) Benzoic acid   (B) Malonic acid   (C) Ethanoic acid   (D) Adipic acid

24. Which compound has lowest boiling point?

(A) $CH_3 - CH_2 - CH_2 - NH - CH_3$ (B) $CH_3 - CH_2 - NH - CH_2 - CH_3$

(C) $CH_3 - CH_2 - CH_2 - CH_2 - NH_2$ (D) $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{N} - CH_3$

25. Which acid possesses zwitter ion?

(A) Picrik acid

(C) Salicylic acid

(B) Sulphanylic acid

(D) Benzoic acid

26. In which reaction 1° amine is not obtain?

(A) Reduction of isonitrile   (B) Reduction of nitrile

(C) Hoffmann reaction of amide   (D) Reduction of amide

27. Which is incorrect statement for Aniline?

(A) It is basic in nature thus soluble in HCl

(B) Its boiling point is higher than benzene

(C) It is used in vulcanisation of rubber

(D) It becomes dark red coloured when kept open air for a long time because of reduction.

28. What is the chemical name of B1?

(A) Biotin   (B) Riboflavin   (C) Thiamine   (D) Pyridoxine

29. Which is the purine base?

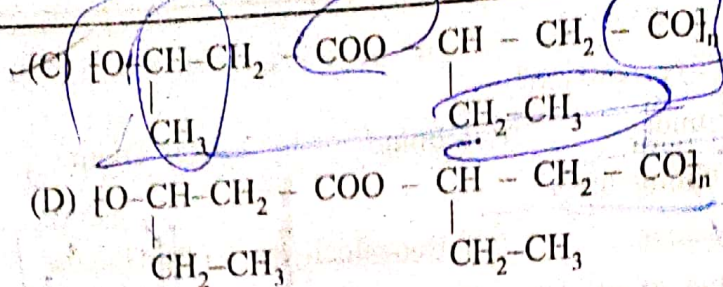(A) Cytosine   (B) Guanine   (C) Thymine   (D) Uracil

30. Which carbohydrate is tetrasaccharide?

(A) Stachyose   (B) Maltose   (C) Raffinose   (D) Cellulose

31. Which is correct structure of PHBV?

(A) $\{O-\underset{\underset{CH_3}{|}}{CH}-CH_2-COO-\underset{\underset{CH_3}{|}}{CH}-CH_2-CO\}n$

(B) $\{O-\underset{\underset{CH_3}{|}}{CH}-CH_2-CO-\underset{\underset{CH_2-CH_3}{|}}{CH}-CH_2-CO\}_n$

(C) $[O-CH-CH_2-COO-CH-CH_2-CO]_n$

          CH_3 CH_2-CH_3

(D) $[O-CH-CH_2-COO-CH-CH_2-CO]_n$

          CH_2-CH_3 CH_2-CH_3

32. Bakelite is which type of polymer?

   (A) Cross linked   (B) Branched   (C) Linear   (D) Semisynthetic

33. Which of the following is food preservatives?

   (A) Ascorbic acid   (B) Citric acid   (C) Sodium benzoate (D) Tetrazine

34. Which is antifertility drug?

   (A) Mestranol   (B) Veronal   (C) Luminal   (D) Seconal

35. In which of the following crystal system, all the edge length are not same?

   (A) $CaCO_3$ (B) $CaSO_4$ (C) ZnS   (D) HgS

36. Which compound becomes paramagnetic on heating?

   (A) C_6H_6 (B) MnO   (C) Fe_3O_4 (D) NaCl

37. How many number of atoms per unit cell in the following unit cell?
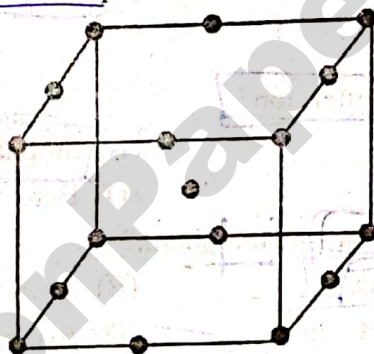
   (A) 5

   (B) 3

   (C) 2

   (D) 4

38. Edge length is 200 pm in body centred unit cell what will be radius of atom in pm.

   (A) 139   (B) 150   (C) 86.6   (D) 93.4

39. What will be boiling point, (in K) of 0.1 m aqueous solution of urea? ($K_b = 3.2$ K kg mole^{-1})

   (A) 373.32   (B) 100.32   (C) 0.32   (D) 405.2

40. Which solution has highest osmetic pressure under identical condition?

   (A) 0.1 M $FeCl_3$ (B) 0.1 M $BaCl_2$ (C) 0.1 M NaCl   (D) 0.1 M glucose

41. The solubility of which solution decreases with increase in temperature?

   (A) Aqueous solution of H_2SO_4 (B) Aqueous solution of sugar

   (C) Chlorine water   (D) Na-Hg Amalgam

42. At 298 K temperature which cell has highest cell potential at equilibrium?

$$E^\circ_{Mg^{2+}/Mg} = -2.37 \text{ V}$$

$$E^\circ_{Cu^{2+}/Cu} = 0.34 \text{ V}$$

(A) $Pt|H_{2(g)}||H^+_{(0.01M)}||Cu^{2+}_{(0.01M)}|Cu$ (B) $Mg|Mg^{2+}_{(0.02M)}||Cu^{2+}_{(0.01M)}|Cu$

(C) $Mg|Mg^{2+}_{(0.01M)}||H^+_{(0.01M)}|H_{2(g)}|Pt$ (D) Equal for given all

43. For which compound graph of $\Lambda_m \to \sqrt{C}$ is not straight line?

(A) $MgCl_2$ (B) KCl   (C) NaCl   (B) ICN

44. What will be change in pH during electrolysis of aqueous solution of $CuSO_4$ by using inert electrodes?

(A) Remain constant   (B) Decrease

(C) Increase   (D) Increases and then decreases

45. Which mixture acts as cathode in mercury cell?

(A) KOH + ZnO   (B) MnO_2 + C   (C) HgO + C   (D) Zn – Hg / CdO

46. Which is not method for concentration of ores?

(A) Liquation   (B) Leaching   (C) Froth floatation   (D) Washing

47. Which reaction occurs at more than 1200 K temperature in Blast furnace.

(A) $Fe_2O_3 + CO_{(g)} \to 2FeO + CO_{2(g)}$ (B) $Fe_3O_4 + CO_{(g)} \to 3FeO + CO_{2(g)}$

(C) $3Fe_2O_3 + CO_{(g)} \to 2Fe_3O_4 + CO_{2(g)}$ (D) $FeO + CO_{(g)} \to Fe + CO_{2(g)}$

48. Which is the hybridisation of central atom of XeF_6 compound?

(A) sp^3d (B) sp^3d^3 (C) sp^3d^2 (D) d^2sp^3

49. Which element has positive value of electron gain enthalpy?

(A) Ne   (B) Cl   (C) N   (D) O

50. Which compound is used in bleaching of flour?

(A) SO_2 (B) Cl_2 (C) O_3 (D) NaOCl

❑ ❑ ❑

PART-B : July 2018

Time : 2 Hours]   052 (G)   [Maximum Marks : 50

Instructions : (1) Write in clear ligible handwriting.

(2) There are three sections in Part-B of the question paper and total 1 to 18 questions are there.

(3) All the questions.

(4) The numbers at right side represent the marks of 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. Write four differences of Schottky and Frenkel defects.

2. Explain zone Refining method to refined metal (figure not required).

3. State the chemical reaction of Cu with dilute HNO_3 and P_4 with con. HNO_3.

OR

State the reaction of C12 with cold, dilute NaOH and $KMnO_4$ with HCl.

4. $TiCl_3$ is paramagnetic where as $TiCl_4$ is diamagnetic, give reason.

5. State the reasons of denaturation of proteins.

OR

State the classification amino acids.

6. State the reaction to prepared Teflon and give its two uses.

7. Write name of monomers of Glyptal and structure of Glyptal.

8. What are non-narcotic analgesic drugs? Give two examples.

SECTION-B

- Answer the following Q.No. 9-14 in detail, 3 marks for each question.   [18]

9. The potential of the given following cell is 0.46 V at 298 K temperature, calculate the pH of HCl solution. $\left(E^{\circ}_{Cu/Cu^{2+}} = -0.34\ V\right)$

$$^{\ominus}Pt\ |\ H_{2_{(1M)}}\ |\ HCl_{(x\ M)}\ ||\ Cu^{2}_{(0.02M)}\ |\ Cu_{(s)}$$
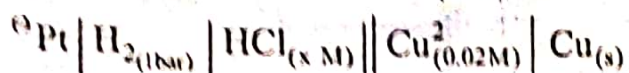
OR

For how much time 4.8 ampere current should be passed through 100 ml 0.025 M $AgNO_3$ solution during the electrolysis so that Ag is completely deposited?

10. Draw the structure of orthophosphorus, orthophosphoruc and pyrophosphoric acid. Also gives order of acidic strength.

11. Explain reaction mechanism with figure of reaction of tertiary butyl chloride with aqueous NaOH.

12. Explain Langmuir adsorption isotherm.

13. Describe cross aldol condensation reaction between acetone and acetaldehyde.

14. Give conversion in three steps : Benzonitrile from chlorobenzene.

SECTION-C

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

15. State and prove Raoult's law for non-volatile solute. Hence derive formula to determine molecular mass of solute.

16. Write the reaction to prepared salicylic acid from phenol and state the structural formula and use of methyl salicylate and Aspirin.

17. A first order reaction completed 40% in 30 min at 298 K temperature. Same reaction is completed 50% in 10 min at 318 K temperature. What will be the energy of activation of reaction.
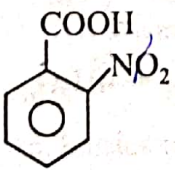
OR

Half reaction time for decomposition of H_2O_2 (first order reaction) is 360 min. at 380°C temperature. Energy of activation of reaction is 200 kJ mole'. What will be time required for 75% decomposition at 450°C temperature.

18. Explain hybridisation, geometrical shape and magnetic property of $[Ni(NH_3)_2Cl_2]$ complex. Draw their isomers.

□ □ □

BOARD Q. PAPER-1 : JULY 2018 : SOLUTION

PART-A

1. (C) 1 - chloro but - 2 - ene

2. (B) Swartz

3. (B) CCl_4

4. (C) Reaction of alcohol with metal

5. (C) 3 : 1

6. (B) $C_6H_5 - O - C_6H_5$

7. (C) –50

8. (C) $[R]_0$

9. (B) Third

10. (A) $Cu / ZnO - Cr_2O_3$

11. (C) Anode

12. (B) KCl

13. (A) Nitinol

14. (D) Fe^{3+}

15. (C) 6 and 8

16. (B) $Gd_2(SO_4)_3$

17. (C) $eg^4 \, t_2g^3$

18. (C) Potassium ferricyanide

19. (A) 5

20. (B) Amine

21. (D) Glucose

22. (C)
COOH
NO_2

23. (A) Benzoic acid

24. (D) $CH_3 \diagdown CH_2 - N \diagup CH_3$
              |
             CH_3

25. (B) Sulphanylic acid

26. (A) Reduction of isonitrile

27. (B) Its boiling point is higher than benzene

28. (C) Thiamine

29. (B) Guanine

30. (A) Stachyose

31. (C) $\{O-CH-CH_2 - COO - CH - CH_2 - CO\}_n$
            | |
           CH_3 CH_2-CH_3

32. (A) Cross linked

33. (C) Sodium benzoate

34. (A) Mestranol

35. (B) $CaSO_4$

36. (C) Fe_3O_4

37. (D) 4

38. (C) 86.6

39. (A) 373.32

40. (A) 0.1 M $FeCl_3$

41. (C) Chlorine water

42. (D) Equal for given all

43. (D) HCN

44. (B) Decrease

45. (C) HgO + C

46. (A) Liquation

47. (D) $FeO + CO_{(g)} \rightarrow Fe + CO_{2(g)}$

48. (C) sp^3d^2

49. (A) Ne

50. (C) O_3