

CHEMISTRY
GUJCET

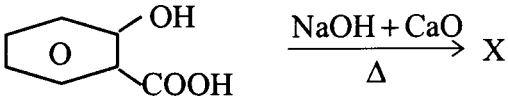
Sample Paper-1

Time : 1:00 Hr.]

STD : XII

[Total Marks : 40

1. The correct bond order in N_2 and F_2 molecules are respectively :
(A) 2, 3 (B) 3, 1
(C) 3, 2 (D) 1, 1
2. The value of n , l , and m , for $3dz^2$ are :
(A) 3, 1, +2 (B) 3, 2, +3
(C) 3, 2, +2 (D) 3, 3, +3
3. H-bond is possible only in :
(A) NH_3 (B) SiH_4
(C) $CH_3 - CO - CH_3$ (D) CH_4
4. $Si_2O_7^{6-}$ is present in :
(A) Thortvetite (B) Zircon
(C) Beryl (D) Talc
5. The value of r^+ / r^- for BCC structure is :
(A) 0.15 – 0.22 (B) 0.22 – 0.41
(C) 0.73 and above (D) 0.41 – 0.73
6. In crystal of HCP, the co-ordination number of a given sphere is :
(A) 4 (B) 6
(C) 8 (D) 12
7. The most common oxidation state of Lanthanide is :
(A) + 2 (B) + 6
(C) + 3 (D) + 4
8. The type of hybridisation in $K_3 [Fe (CN)_6]$, $[Fe (H_2O)_6] Cl_3$ and $K_2 [Ni(CN)_4]$ are respectively :
(A) d^2sp^3 , d^2sp^3 , dsp^2 (B) d^2sp^3 , sp^3d^2 , sp^3
(C) sp^3d^2 , sp^3d^2 , dsp^2 (D) d^2sp^3 , sp^3d^2 , dsp^2
9. Which of the following is used as control rods in nuclear reactor ?
(A) Heavy Water (B) Boron
(C) Graphite (D) Uranium
10. Maleic acid and fumaric acid are which type of isomers ?
(A) Geometrical (B) Optical
(C) Functional Group (D) Position

11.  Substance x is :
 (A) Phenol (B) Benzene
 (C) Benzaic Acid (D) Benzyl Alcohol
12. Which of the following can give carbyl amine test ?
 (A) Di-Ethyl amine (B) Tri-methyl amine
 (C) ISO-propyl amine (D) N-methyl amine
13. The cationic detergent is :
 (A) LAS (B) ABS
 (C) 4^o-amine salt (D) DDBS
14. Xerophthalaemia diseases is produced due to lack of vitamine :
 (A) Vitamin - B₆ (B) Biotin
 (C) Vitamin - C (D) Vitamine - A
15. Phenol + Br₂ / x $\xrightarrow{5^\circ\text{C}}$ P-bromophenol. Here x is :
 (A) CS₂ (B) H₂O (Water)
 (C) CS₂ + H₂O (D) None of these
16. Caprolactum on polymerisation producer :
 (A) Nylon 6 (B) Nylon 66
 (C) Decron (D) Nylon 2, 6
17. What is not true about meso compound ?
 (A) It does not rotate plane of polarised light.
 (B) It has always even number of C-atoms.
 (C) It is optically inactive
 (D) It has plane of symmetry or centre of symmertry.
18. The osmotic pressure of 6% W/V glucose solution at 300 K is : (R = 0.082)
 (M. Wt. of glucose = 180 g/ml)
 (A) 0.41 atm (B) 8.2 atm
 (C) 82.1 atm (D) 0.82 atm
19. The work done during expansion of 1 mole ideal gas in vacumm is :
 (A) 2 cal (B) 8 cal
 (C) 100 cal (D) Zero
20. When a lead storage cell is charged, which of the following is correct ?
 (A) PbSO₄ is produced. (B) PbSO₄ is consumed.
 (C) H₂SO₄ is consumed. (D) SO₂ gas is evolved.

21. The product obtained in following reaction is :
 Acetone $\xrightarrow{\text{CH}_3\text{MgI}}$ y $\xrightarrow{\text{Hydrolysis}}$ Z. Then Z is :
 (A) 2-butanol (B) tert-butyl alcohol
 (C) 1-Butanol (D) iso-butyl alcohol
22. Ethoxy ethane reacts with :
 (A) Na metal (B) Neutral KMnO_4
 (C) $\text{NaOH}_{(\text{aq})}$ (D) Conc. HI
23. The side-product of Dow's process is :
 (A) Phenoxy benzene (B) Phenol
 (C) Salicylic acid (D) Sodium phenoxide
24. The number of ester linkages in wax is / are :
 (A) One (B) Two
 (C) Infinite (D) No ester linkage
25. Which of the following has highest number of unpaired electrons in transition metal ion ?
 (A) KMnO_4 (B) $\text{K}_4[\text{Ni}(\text{CN})_4]$
 (C) $[\text{Fe}(\text{H}_2\text{O})_6]\text{Cl}_3$ (D) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$
26. Which of the following metal is extracted by cyanide method ?
 (A) Fe (B) Cu
 (C) Ag (D) Hg
27. The acid having lowest basicity is :
 (A) H_3PO_3 (B) H_3PO_4
 (C) H_3PO_2 (D) $\text{H}_4\text{P}_2\text{O}_7$
28. F_2 can not react with which of the following ?
 (A) IF (B) IF_3
 (C) IF_5 (D) IF_7
29. Which of the following element is wrongly mentioned ?
 (A) Haemoglobin – Fe (B) Chlorophyll – Mg
 (C) Vitamin-B₁₂ – Co (D) Vitamin C – Pt
30. A tripeptide has how many peptide bonds ?
 (A) 1 (B) 2
 (C) 3 (D) 4
31. Hydrolysis of sucrose is known as :
 (A) Inversion (B) Saponification
 (C) Esterification (D) Hydration

32. What is true for elementary reaction ?
- (A) Order of reaction and molecularity same.
 (B) Order of reaction and molecularity are never same.
 (C) There is no relation between order of reaction and molecularity of reaction.
 (D) Order of reaction is always greater than molecularity.
33. The smoke is an example of which of the following :
- (A) Gas dispersed in solid. (B) Solid dispersed in gas
 (C) Gas dispersed in liquid. (D) Solid dispersed in Solid.
34. Which of the following is not related with colloids ?
- (A) Tyndall effect (B) Dialysis
 (C) Brownian movement (D) Corrosion
35. The co-ordination number of Co in $[\text{Co}(\text{en})_2\text{Cl}_2]\text{NO}_3$ is :
- (A) 4 (B) 6
 (C) 5 (D) 1
36. The formula of cinnabar is :
- (A) HgS (B) Ag_2S
 (C) PbS (D) FeS_2
37. The number of α -particles emitted in the ${}^{238}_{92}\text{X} \longrightarrow {}^{230}_{88}\text{Y}$ is / are :
- (A) 2 (B) 3
 (C) 4 (D) None of these
38. What is true about KMnO_4 ?
- (A) It is coloured but diamagnetic (B) It is polycentered and octahedral
 (C) It is colourless and paramagnetic (D) It is very weak oxidizing agent
39. Which of the following base is not present in RNA ?
- (A) Adenosine (B) Guanine
 (C) Thiamine (D) Cytosine
40. Alizarine is :
- (A) Vat dye (B) Mordant dye
 (C) Acid - dye (D) Dispersed dye

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Sample Paper-2

Time : 1:00 Hr.]

STD : XII

[Total Marks : 40

1. Write the value of E for the hydrogen atom and ions containing only one electron.

(A) $E_n = \frac{-2\pi^2 m e^4}{n^2 h^2}$

(B) $E_n = \frac{-2\pi m^2 z^2 e^4}{n^2 h^2}$

(C) $E_n = \frac{-2\pi^2 m z^2 e^4}{n^2 h^2}$

(D) $E_n = \frac{-2\pi m z e^2}{n^2 h}$

2. Which orbital possesses maximum energy ?

(A) 4d

(B) 4f

(C) 4p

(D) 4s

3. Which ion is present in pyrosilicate compounds ?

(A) $\text{Si}_2\text{O}_7^{6-}$

(B) $\text{Si}_2\text{O}_4^{6-}$

(C) $\text{Si}_2\text{O}_4^{6+}$

(D) None of these

4. From the following oxide which is good electrical conductor ?

(A) TiO_2

(B) CrO_2

(C) Ti_2O_3

(D) FeO

5. What is the value of Van't Hoff factor (i) when there is an association of solute takes place ?

(A) More than one

(B) Zero

(C) More than two

(D) Less than one

6. Concentration of reactants and products on a Haining equilibrium state _____.

(A) Becomes Constant

(B) Become equal

(C) Becomes Zero

(D) None of these

7. On passing SO_2 gas in water, its entropy _____.

(A) Increases

(B) Decreases

(C) Remains Constant

(D) Does not change

8. What is the concentration of H^+ in 0.001M KOH solution at 25°C ?

(A) 0.001 M

(B) 10^{-11} M

(C) 10^{11} M

(D) 10^{+3} M

9. It reaction occurs in a concentration cell then _____.

(A) Ions of concentrated solution go towards dilute solution.

(B) Ions of dilute solution go towards concentrated solution

(C) Concentration of ions do not change.

(D) Ions become neutral.

10. Resistance of any uniform conductor is _____.
 (A) Directly proportional to its cross-sectional area.
 (B) Inversely proportional to its length.
 (C) Directly proportional to its length.
 (D) Inversely proportional to the square of its area.
11. What will be the order of the reaction if the value of the rate constant of the reaction is $175 \text{ litre}^2 \text{ mol}^{-2} \text{ sec}^{-1}$?
 (A) Zero (B) First
 (C) Third (D) Second
12. At 40°C temperature if a first order reaction under goes 50% completion is 30 minutes, what is the value of its rate constant ?
 (A) $\frac{0.693}{K}$ (B) 2.31 minutes
 (C) $0.0231 \text{ minute}^{-1}$ (D) $2.31 \times 10^{-2} \text{ sec.}$
13. Identify the hydrophobic sol _____.
 (A) Gelatin (B) Gum
 (C) Sugar (D) Sulphur
14. Emulsion of asphalt used in construction of roads is prepared from _____.
 (A) In water (B) In oil
 (C) In petrol (D) In kerosene
15. Para-periodic acid is :
 (A) Octahedral (B) Monobasic
 (C) Unstable (D) All of these
16. Which of the following can form dimer ?
 (A) AlCl_3 (B) PCl_3
 (C) BCl_3 (D) All of these
17. The oxidation number of central halogen in KClO_4 is :
 (A) +1 (B) +3
 (C) +5 (D) +7
18. Which of the following is colourless ?
 (A) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ (B) $[\text{Cu}(\text{H}_2\text{O})_4]^{2+}$
 (C) $[\text{Ti}(\text{H}_2\text{O})_4]^{4+}$ (D) $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$
19. The formula of chromite ore is :
 (A) $\text{Fe}_2\text{Cr}_2\text{O}_7$ (B) FeCr_2O_4
 (C) FeCr_2O_7 (D) FeCrO_4

20. N/P ratio in $^{235}_{92}\text{U}$ is :
- (A) 1.8 (B) 0.8
(C) 1.5 (D) 3.0
21. Which of the following isotope and its use mentioned wrongly ?
- (A) Na - Circulation of blood (B) I - Thyroid
(C) Co - Cancer (D) N - Radiometric dating
22. How many no. of chiral carbons are present in glucose molecule ?
- (A) 6 (B) 4
(C) 5 (D) 3
23. What is true about enantiomers ?
- (A) Optically inactive (B) Does not form racemic mixture
(C) Not super impossible (D) Can form meso
24. Which one is the anionic bidentate ligand ?
- (A) en (B) ox
(C) ptn (D) edta
25. Which of the following has maximum theoretical magnetic moment ?
- (A) $\text{K}_4[\text{Fe}(\text{CN})_6]$ (B) $\text{K}_3[\text{Fe}(\text{CN})_6]$
(C) $\text{K}_2[\text{Ni}(\text{CN})_4]$ (D) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
26. Which of the following has the highest B.P. ?
- (A) 1 - butanol (B) 2 - butanol
(C) Isobutyl Alcohol (D) 2-me. propanol
27. Which compound is retained on dehydration of ethanol ?
- (A) Ethane (B) Ethene
(C) Acetaldehyde (D) Acetic acid
28. Which substance from the following given "Fehling's Test" ?
- (A) CH_3COCH_3 (B) $\text{CH}_3\text{CH}_2\text{OH}$
(C) CH_3OCH_3 (D) CH_3CHO
29. Oxidation of which compound from the following is not possible ?
- (A) CH_3COCH_3 (B) CH_3CHO
(C) CH_3COOH (D) $\text{CH}_3\text{CH}_2\text{OH}$
30. Acetophenone on reaction with which substance forms ethyl benzene ?
- (A) Ni / H_2 (B) Na / $\text{C}_2\text{H}_5\text{OH}$
(C) Zn / Hg / Conc HCl (D) LiAlH_4

31. What is the IUPAC name of the product obtained when methyl cyanide is heated with ethanol and concentrated aqueous H_2SO_4 ?
 (A) Ethanoic acid (B) Ethyl acetate
 (C) Ethyl Ethanoate (D) Methyl ethanoate
 32. Which product is obtained when aniline is reacted with acetyl chloride ?
 (A) Phenol (B) Acetamide
 (C) Acetanilide (D) Benzene
 33. From the following amines which does not react with acetyl chloride ?
 (A) CH_3NH_2 (B) $(\text{CH}_3)_2\text{NH}$
 (C) $(\text{CH}_3)_3\text{N}$ (D) $(\text{C}_2\text{H}_5)_2\text{NH}$
 34. Which biodegradable polyester is used for post operative stitches ?
 (A) PHBV (B) PTFE
 (C) Nylon-2, Nylon-6 (D) Dextran
 35. What is the value of PDI in natural polymer compounds ?
 (A) 0 (B) 100
 (C) 1 (D) 10
 36. Which is protein fibre from the following ?
 (A) Cotton (B) Rayon
 (C) Silk (D) Polyester
 37. Which type of secretion from adrenal endocrine gland ?
 (A) Thyroxine (B) Testosterone
 (C) Progesterone (D) Epinephrine
 38. What is the pH value of amino acid at isoelectric point ?
 (A) 5.5 to 6.3 (B) 8.9 to 11.5
 (C) 2.3 to 5.6 (D) 6.3 to 8.5
 39. Which compound is used as antioxidant in food ?
 (A) B.H.T. (B) Alitame
 (C) Sorbic acid (D) Aspartame
 40. Which type of carbon fibers are used in manufacture of aircraft wings ?
 (A) CFRP (B) CFRC
 (C) CRFC (D) PRFC
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Sample Paper-3

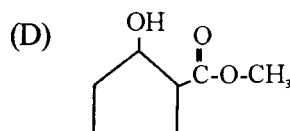
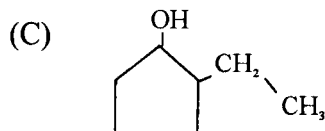
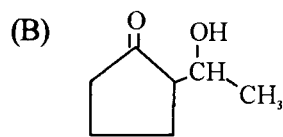
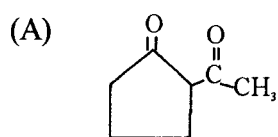
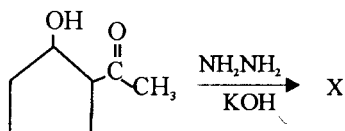
Time : 1:00 Hr.]

STD : XII

[Total Marks : 40

1. Cell reaction : $\text{Fe}_{(s)} + \text{Cu}^{2+}_{(aq)} (0.01\text{M}) \rightarrow \text{Fe}^{2+}_{(aq)} (x\text{M}) + \text{Cu}_{(s)}$
 $E_{\text{cell}} = 0.81 \text{ V}$
Which of the following is correct ?
 $E^{\circ}_{\text{Fe/Fe}^{2+}} = 0.44 \text{ V}$ and $E^{\circ}_{\text{Cu}^{2+}/\text{Cu}} = 0.34\text{V}$
(A) $x > 0.01 \text{ M}$ (B) $x < 0.01 \text{ M}$
(C) $x = 0.01 \text{ M}$ (D) x can not be predicted.
2. For diatomic molecules having ($z = 10$), which relation of the following is correct ?
(A) Bond order $\propto \frac{1}{\text{stability}} \propto \text{Bond length}$
(B) Bond order $\propto \frac{1}{\text{Bond length}} \propto \text{Stability}$
(C) Bond order $\propto \text{stability} \propto \text{Bond length}$
(D) Bond order $\propto \frac{1}{\text{Stability}} \propto \frac{1}{\text{Bond length}}$
3. Which of the following sugar is most sweet ?
(A) Glucose (B) Alitame
(C) sucralose (D) Fructose
4. Which of the following is not the use of carbon fibres ?
(A) In components of bone plate in human body
(B) In hip joint prostheses
(C) In hydraulic motors for artificial heart implants
(D) As sutures in human body
5. When glucose is reacted with phenyl hydrazine to form glucosazone, the number of moles of phenyl hydrazine that are used up :
(A) 1 (B) 2
(C) 3 (D) 4
6. Which of the following oxide is not added to prepare super conductor ceramics ?
(A) CrO_2 (B) CaO
(C) BaO (D) CuO
7. Which monomers are present in Nylon-2-Nylon-6 polymer ?
(A) Glycine and addipic acid (B) Ethylene glycol and amino caproic acid
(C) Amino caproic acid Glycine (D) β -hydroxy butyric acid and Styrene

8. Find X in following reaction :



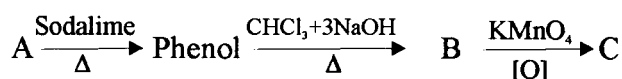
9. Which of the following statement is not correct about aniline ?

- (A) It turns into deep red colour due to reduction reaction when kept open in air for long time.
- (B) It burns with sooty flame.
- (C) It is used as solvent and in vulcanisation of rubber.
- (D) It is less basic than methyl amine.

10. For the structure $\begin{matrix} R_1 \\ \diagdown \\ N-R_3 \\ \diagup \\ R_2 \end{matrix}$ which of the following combination will give diazotization reaction ?

- (A) If $R_1 = \text{H}$, $R_2 = \text{CH}_3$ and $R_3 = \text{C}_6\text{H}_5$
- (B) If $R_1 = \text{H}$, $R_2 = \text{H}$ and $R_3 = \text{C}_6\text{H}_5$
- (C) If $R_1 = \text{C}_6\text{H}_5$, $R_2 = \text{CH}_3$ and $R_3 = \text{CH}_3$
- (D) If $R_1 = \text{C}_6\text{H}_5$, $R_2 = \text{H}$ and $R_3 = \text{C}_6\text{H}_5$

11. For the conversion :



In this conversion, the compounds A and C are same then that compound would be :

- (A) Salicylaldehyde
- (B) Cinnamaldehyde
- (C) Picric acid
- (D) Salicylic acid

12. When methanol on oxidation converted to methanoic acid, then the oxidation number of carbon of caronyl group changes as :

- (A) Increases from +1 to +3
- (B) Increases from 0 to +2
- (C) Increases from +1 to +2
- (D) Increases from zero to +3

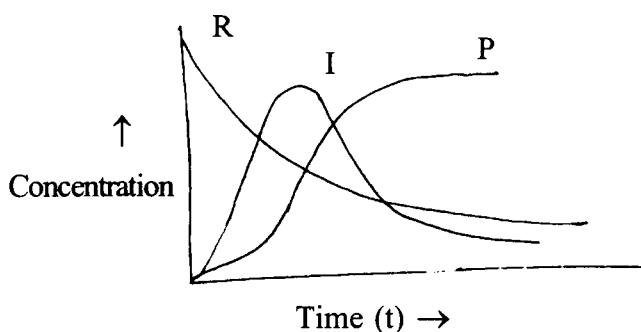
13. In which of the following reaction, the total number of carbon atoms do not change during the formation of product ?

- (A) Condensation reaction of ketone with hydrazine in acidic medium
- (B) In Hoffman reaction
- (C) When carboxylic acid is heated with sodalime.
- (D) In oxidation of ketone by acidic KMnO_4 .

14. How many primary isomers are possible of all isomers of amine having formula C_3H_9N
- (A) 1 (B) 2
(C) 3 (D) 4
15. Which of the following acid will not respond toward decarboxylation reaction ?
- (A) Ethanoic acid (B) Picric acid
(C) Salicylic acid (D) Benzoic acid
16. The stereoisomeric structures which are produced by the rotation around single bond and are interconvertible with each other are possible in which of the following compound ?
- (A) n-Butane (B) 1,2 - dibromo ethene
(C) Fumaric acid (D) 2-Butene
17. In radioactive reaction : ${}_a^bX \rightarrow {}_c^dY$, the correct formula to calculate the number of β -particles that are emitted is :
- (A) $C + \left[\frac{b-d}{2} \right] - a$ (B) $\left[\frac{b-d}{2} \right] + \frac{a}{c}$
(C) $\left[\frac{b+d}{2} \right] + (a-c)$ (D) $b + \left[\frac{a-c}{2} \right] + d$
18. The number of meso forms of four possible stereo isomers of 2, 3-dihydroxy butanoic acid are/is :
- (A) Zero (B) Four
(C) Two (D) One
19. The half-life of radio active substance is 15 minute. What would be its radioactivity after 45 minutes in comparison of original activity ?
- (A) 12.5% (B) 50%
(C) 15.0% (D) 17.5%
20. The element which belongs to group-16 and used in photocopier possesses which of the following characteristics ?
- (A) Its electron configuration is $[Kr] 4d^{10}5s^25p^4$
(B) The values of four quantum number for last entering electron are $n = 4$, $l = 1$, $m = -1$ and $S = -1/2$
(C) It is extracted from principal ores galena and cinnabar.
(D) It is used as a heat source in space equipment.
21. The complex ion $[Co(NH_3)_5Cl]^{2+}$ absorbs yellow radiations. Thus, it emits the radiations of which of the following colours ?
- (A) Blue (B) Violet
(C) Red (D) Yellow-orange

22. Which of the following complex possess highest magnetic moment ?
 (A) $K_3 [Fe (CN)_6]$ (B) $K_3 [Fe F_6]$
 (C) $K_4 [Fe (CN)_6]$ (D) $[Fe (CO)_6]SO_4$
23. Which of the following defect is found in pure crystal of AgBr at zero kelvin temperature ?
 (A) Only frenkel defect (B) Only schottky defect
 (C) Frenkel and Schottky defects both (D) None of these
24. Which is correct about amorphous solids ?
 (A) Their melting points are not fixed and sharp.
 (B) The arrangement of their constituents is of definite symmetrical pattern.
 (C) They have specified crystal structure.
 (D) They can not be brought into crystalline stage by heating.
25. Reaction $X_2 + 2OH^- \rightleftharpoons OX^- + X^- + H_2O$
 This reaction is which of the following type ?
 (A) Neutralization (B) Decomposition
 (C) Hydrolysis (D) Disproportionation
26. Which of the following catalyst is used during preparation of adiponitrile from butadiene and HCN ?
 (A) Ni, Pd complex compound (B) Bismuth molybdate
 (C) Organo chromium and titanium (D) Rh/Pd complex compound
27. Reaction : $2SO_{2(g)} + O_{2(g)} \xrightarrow{V_2O_{5(s)}} 2 SO_{3(g)}$
 This catalysis reaction is also known as :
 (A) Homogeneous catalysis (B) Enzyme catalysis
 (C) Shape selective catalysis (D) Surface catalysis
28. If rate = $K [A] [B]^{0.5}$ and concentration of A and B both are made double, then how many times the rate of reaction will increase ?
 (A) 2.82 times (B) 8 times
 (C) 10 times (D) 4.84 times
29. Which of the following reaction would be fastest ?
 (A) $AgNO_{3(aq)} + NaCl_{(aq)} \rightarrow AgCl_{(s)} + NaNO_{3(aq)}$
 (B) $MnO_{4(aq)}^- + 5Fe^{2+}_{(aq)} + 8H^+_{(aq)} \rightarrow Mn^{2+}_{(aq)} + 5 Fe^{3+} + 4H_2O_{(l)}$
 (C) $N_{2(g)} + 3H_{2(g)} \rightarrow 2NH_{3(g)}$
 (D) $CH_3CH_2Cl + OH^-_{(aq)} \rightarrow CH_3CH_2OH + Cl^-_{(aq)}$

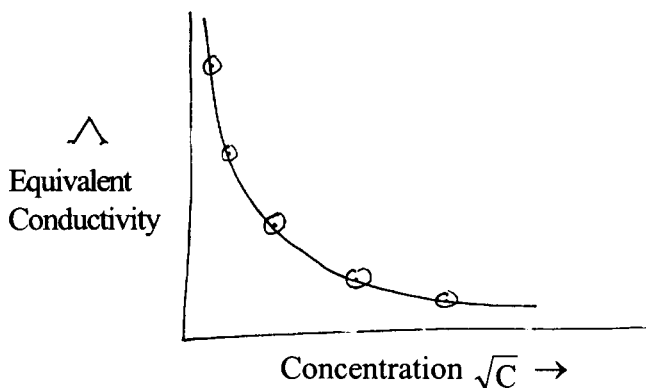
30.



This graph is related with which of the following reaction mechanism ?

- (A) It shows that threshold energy is responsible for fast reaction.
- (B) It shows the importance of average rate of reaction with time.
- (C) It shows the mechanism of slow step involving reaction with time.
- (D) It shows reaction mechanism of two successive first order steps with time.

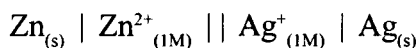
31.



Which of the following electrolyte will give above graph for $\wedge \rightarrow \sqrt{C}$?

- | | |
|-------------------------------|---|
| (A) CH_3COONa | (B) KCl |
| (C) AgNO_3 | (D) $\text{H}-\text{O}-\text{C}-\text{CH}_3$
\parallel
O |

32. When 9650 coulomb of electricity is drawn from following cell, which of the following is correct ?



- (A) The concentration of each of Zn^{2+} and Ag^{+} ion decreases by 0.1 M.
- (B) The concentration of Zn^{2+} ion decreases by 0.05 M and concentration of Ag^{+} ion decreases by 0.1 M.
- (C) The concentration of Zn^{2+} ion increases by 0.05 M and concentration of Ag^{+} ion decreases by 0.1 M.
- (D) The concentration of Zn^{2+} ion increases by 0.1 M and concentration of Ag^{+} ion decreases by 0.1 M.

33. In the following pair of molecules, in which pair the first molecule has maximum stability and second molecule has maximum number of electrons in ABMO ?

- | | |
|------------------------------|------------------------------|
| (A) N_2, C_2 | (B) N_2, F_2 |
| (C) N_2, O_2 | (D) O_2, C_2 |

34. The energy of a photon of light is $E = 4.0 \times 10^{-12}$ erg. What will be the value of its frequency ?
($h = 6.626 \times 10^{-27}$ erg second)
- (A) $0.6036 \times 10^{15} \text{ s}^{-1}$ (B) $2.504 \times 10^{15} \text{ s}^{-1}$
(C) $5.832 \times 10^{14} \text{ s}^{-1}$ (D) $3.872 \times 10^{14} \text{ s}^{-1}$
35. What is decided by angular quantum number l and magnetic quantum number m respectively ?
- (A) Shape of orbitals and number of orbitals
(B) Sequence of orbits and number of orbitals
(C) Total energy of electron and number of orbitals
(D) Sequence of orbits and shape of orbitals
36. The boiling of 0.5 m unknown substance in aqueous solution is 100.2°C . What would be the freezing point of the same solution ?
 $K_b = 0.52^\circ \text{C Kg mol}^{-1}$ and $K_f = 1.5^\circ \text{C Kg mol}^{-1}$
- (A) -0.577°C (B) -1.733°C
(C) -0.26°C (D) -0.75°C
37. At constant temperature the final pressure of an ideal gas is increased three times as compared to initial pressure P_1 . What will be the free energy change of this process ?
- (A) $\Delta G = -nRT \ln \frac{3P_1}{P_1}$ (B) $\Delta G = -nRT \ln \frac{P_1}{3P_1}$
(C) $\Delta G = -nRT \ln (P_1 \times 3P_1)$ (D) $\Delta G = -nRT \ln P_1$
38. In which of the following change the entropy of the system increases ?
- (A) In decreasing the volume of system at constant temperature.
(B) In increasing the pressure of system at constant temperature.
(C) In decreasing temperature of system at constant pressure.
(D) None of these
39. Which of the following has highest boiling point ?
- (A) CH_3CH_3 (B) $\text{CH}_3\text{CH}_2\text{OH}$
(C) $\text{CH}_3\text{CH}_2\text{NH}_2$ (D) $\text{CH}_3\text{CH}_2\text{NO}_2$
40. Which of the following change take place when apples and bananas are ripened ?
- (A) Starch into Glucose (B) Glucose into Starch
(C) Cellulose into Glucose (D) Lactose into Glucose

CHEMISTRY
GUJCET

Sample Paper-4

Time : 1:00 Hr.]

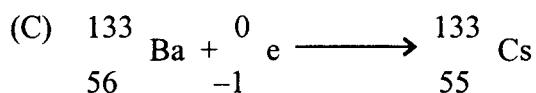
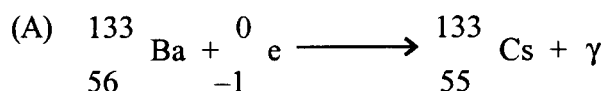
STD : XII

[Total Marks : 40

1. Product available during following reaction is $\text{CO}_{(g)} + \text{H}_{2(g)} \xrightarrow{\text{Copper}}$
(A) Formic acid (B) Methane
(C) Methanol (D) Formaldehyde
2. $\text{X} \xrightarrow{\text{LiAlH}_4}$ Phenyl methanol + y Compound
which of the following is not X :
(A) Ethyl benzoate (B) Acetophenone
(C) Benzoic acid (D) Benzoyl chloride
3. With which cation, alizarin will impart a red colour on the fabrics ?
(A) Fe^{3+} (B) Sr^{2+}
(C) Cr^{3+} (D) Ba^{2+}
4. What type of detergent DDBS is ?
(A) Cationic (B) Non-ionic
(C) Bio hard (D) Bio soft
5. What is the pH value of amino acid at its iso electric point ?
(A) 3.5 to 5.5 (B) 5.5 to 11.5
(C) 5.5 to 6.3 (D) 0 to 14
6. The principal source of cellulose is :
(A) Linen (B) Dextran
(C) Glycogen (D) Starch
7. State the type of polymer used in plastic paint :
(A) Heavy Polymer (B) Oligomer
(C) Linear Polymer (D) Cross-linked Polymer
8. What is incorrect about aniline ?
(A) It is poisonous to some extent.
(B) When it is kept open in air for long time, it turns into deep red colour due its reduction.
(C) It is sparingly soluble in water.
(D) It burns with shooty flame.

9. How many moles of Br_2 in water will be required at room temperature for bromination of 8 moles of phenol ?
- (A) 3 mole (B) 24 mole
(C) 8 mole (D) 16 mole
10. The sequence of the bases in one strand of structure of DNA is ACATGT. What would be the correct sequence of the bases present in opposite strand ?
- (A) TGTACA (B) TACAGT
(C) GTACAT (D) AGTCAT
11. Freezing point of glucose aqueous solution is -0.372° and $K_f = 1.86^\circ\text{C kg mol}^{-1}$. How much glucose will be present in 3 kg. water of the same solution ? (M.W. of glucose = 180 gm / mole)
- (A) 54 grams (B) 108 grams
(C) 135 grams (D) 72 grams
12. Which of the following will be the structural formula of X in given reaction ?
- $$x + \text{H}_2\text{O} \xrightarrow{\text{H}_2\text{SO}_4, 80^\circ\text{C}} \text{Ethylene glycol}$$
- (A) $\text{CH}_3\text{CH}_2\text{OH}$ (B) $\text{CH}_3\cdot\text{O}\cdot\text{CH}_3$
(C) $\begin{array}{c} \text{CH}_2 - \text{CH}_2 \\ \diagdown \quad \diagup \\ \text{O} \end{array}$ (D) $\begin{array}{c} \text{CH}_2 - \text{CH} - \text{CH}_2 \\ | \quad | \quad | \\ \text{OH} - \text{OH} - \text{OH} \end{array}$
13. The isomer of benzyl alcohol is
- (A) Phenol (B) Catarchol
(C) Cresol (D) Phenetole
14. Fumaric acid is,
- (A) $\begin{array}{c} \text{H} - \text{C} - \text{COOH} \\ || \\ \text{H} - \text{C} - \text{COOH} \end{array}$ (B) $\begin{array}{c} \text{CH}_3 - \text{C} - \text{COOH} \\ || \\ \text{CH}_3 - \text{C} - \text{COOH} \end{array}$
(C) $\begin{array}{c} \text{H} - \text{C} - \text{COOH} \\ || \\ \text{HOOC} - \text{C} - \text{H} \end{array}$ (D) $\begin{array}{c} \text{CH}_3 - \text{C} - \text{COOH} \\ || \\ \text{HOOC} - \text{C} - \text{CH}_3 \end{array}$
15. Anglesite is the ore of which of the following metal :
- (A) Silver (B) Lead
(C) Tin (D) Zinc

16. According to K-electron capture, which of the following is correct ?



(D) None of the above

17. The numbers of neutrons in the atom ${}_{92}^{238}\text{X}$ after the emission of α -particle and β -particle is :

(A) 144

(B) 143

(C) 142

(D) 146

18. What is incorrect about $\text{K}_3[\text{CO}(\text{CN})_4(\text{ACO})_2]$

(A) Unicentred

(B) All ligands are anionic

(C) Mix ligand

(D) Chelate complex

19. The complex which has no 'd' electron in the central metal atom is :

(A) $\text{K}_2[\text{Ni}(\text{CN})_4]$

(B) $\text{K}_2[\text{Ni}(\text{Cl})_4]$

(C) $\text{K}_2[\text{Mn}(\text{O})_4]$

(D) $\text{K}[\text{Mn}(\text{O})_4]$

20. The value of magnetic moment of central metal ion in $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ is :

(A) 1.73 B.M.

(B) 2.83 B.M.

(C) 3.87 B.M.

(D) 5.92 B.M.

21. How much and which kind of the following product will be obtained at cathode when 57900 coulomb is passed through fused AlCl_3 by using inert electrodes

At wt Al = 27 gm/mole and Cl = 35.5 gm/mole

(A) 5.4 gm $\text{Cl}_{2(g)}$

(B) 5.4 Al metal

(C) 21.3 gm Al metal

(D) 21.3 $\text{Cl}_{2(g)}$

22. Important character of thiosulphuric acid is :

(A) It is monobasic acid.

(B) It is dibasic acid.

(C) It is tribasic acid.

(D) It is tetrabasic acid.

23. Carborendum is compound of :

(A) Carbon and Radium

(B) Carbon and Germanium

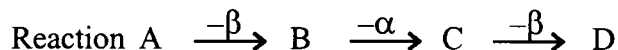
(C) Carbon and Lead

(D) Carbon and Silicon

24. Which of the following is used as water softner ?

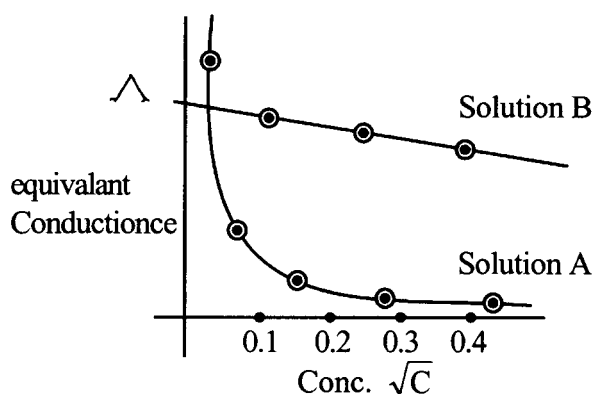
- (A) $P_3O_{10}^{5-}$ (B) $P_2O_7^{4-}$
(C) PO_4^{3-} (D) PO_3^{1-}

25. Which option is true for the following radioactive reaction



- (A) A and D are isotops (B) B and D are isotops
(C) A and C are islops (D) all option are true
26. Very deluted aqueous solution of copper sulphate does not show tyndall effect. Because,
- (A) it is colloidal Sol. (B) it is ionic.
(C) it is coloured solution. (D) it is true solution.

27.

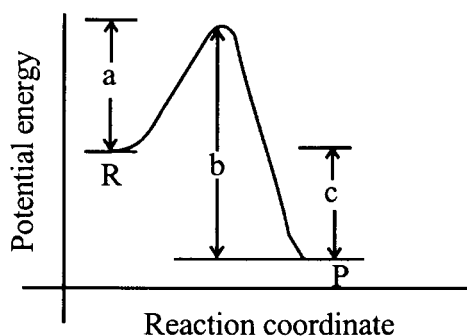


Plotted graph is of equi.

Conductance $\rightarrow \sqrt{C}$ in reference of solution A and B.

Which option is true from the following ?

- (A) A = KCl, B = NaCl (B) A = HCN, B = KI
(C) A = HCN, B = CH_3COOH (D) A = KBr, B = CH_3OONa
28. The potential energy diagram for reaction $R \rightarrow P$ is give below.



Which of the following option represents the value of ΔH ?

- (A) a
(B) b
(C) $(a + c)$
(D) $(b - a)$
29. If $E^\circ_{Cu/Cu^{2+}} = -0.34$ volt the potential of the following cell
 $Cu(s) | Cu^{2+} (0.1 M) || Cu^{2+} (1.0 M) | Cu(s)$ is :
- (A) -0.0296 volt (B) 0.0592 volt
(C) 0.0296 volt (D) -0.0592 volt

30. Which of the following is the Nerust equation to find reduction potential of nonstandard Ni / Ni²⁺ half cell ?

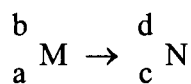
(A) $E_{\text{Ni}^{2+}/\text{Ni}}^{\circ} = E_{\text{Ni}^{2+}/\text{Ni}} - \frac{0.0592}{2} \log \frac{1}{[\text{Ni}^{2+}]}$

(B) $E_{\text{Ni}^{2+}/\text{Ni}} = E_{\text{Ni}^{2+}/\text{Ni}}^{\circ} + \frac{0.0592}{2} \log \frac{1}{[\text{Ni}^{2+}]}$

(C) $E_{\text{Ni}^{2+}/\text{Ni}} = E_{\text{Ni}^{2+}/\text{Ni}}^{\circ} + \frac{0.0592}{2} \log [\text{Ni}^{2+}]$

(D) $E_{\text{Ni}^{2+}/\text{Ni}} = E_{\text{Ni}^{2+}/\text{Ni}}^{\circ} + \frac{0.0592}{2} \log \frac{1}{[\text{Ni}^{2+}]}$

31. What is the correct formula to find the number of β -particle that are emitted in following radio active change –



(A) $\frac{b-d}{2} - \left(\frac{a-d}{4}\right)$

(B) $(b-d) - \left(\frac{a-d}{2}\right)$

(C) $\frac{b-d}{2} - 2(a-c)$

(D) $c + \left(\frac{b-d}{2}\right) - a$

32. The amount of calcium ion found in 1.0 kg of hard water is 0.01 gram. What would be concentration of Ca²⁺ ions in ppm unit ?

(A) 0.01 ppm

(B) 1.0 ppm

(C) 10 ppm

(D) 100 ppm

33. Which one of the following aqueous solutions will have the lowest freezing point ?

(A) 0.1 molal glucose solution

(B) 0.1 molal sodium chloride solution

(C) 0.1 molal sodium sulphate solution

(D) 0.1 molal pottassium Ferrocyanide

34. In which of the following compound both Schottky as well as Frenkel types of defects are found ?

(A) AgCl

(B) AgI

(C) AgBr

(D) ZnS

35. With reference to the radioactive decay series, ²²⁶Ra belongs to certain decay series. Which of the following member belongs to the same series ?

(A) ²³²Th

(B) ²⁰⁷Pb

(C) ²¹⁰Bi

(D) ²³⁵U

36. Which of the following pair, both the metal ions have eqyal magnetic moment ?

(A) Ti²⁺ (z = 22), Cu²⁺ (z = 29)

(B) V²⁺ (z = 23), Fe²⁺ (z = 26)

(C) Mn²⁺ (z = 25), Ni²⁺ (z = 28)

(D) Mn²⁺ (z = 25), Fe³⁺ (z = 26)

37. What is correct about polysaccharides ?
- (A) There are amorphous and form colloidal dispersions.
 (B) They react with phenyl hydrazine.
 (C) They are fermented by yeast.
 (D) They contain aldehyde or ketone group.
38. Which of the following is correct structure of given polymer ?
- (A) Dacron : $\left[\text{O}-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{C}_6\text{H}_4-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{O}-\text{CH}_2-\text{CH}_2-\text{O} \right]_n$
- (B) Nylon 66 : $\left[\text{HN}-(\text{CH}_2)_6-\underset{\text{O}}{\underset{\parallel}{\text{N}}}-\text{C}-(\text{CH}_2)_6-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{O} \right]_n$
- (C) Melamine : $\left[\begin{array}{c} \text{N} \\ | \\ \text{HN} \text{---} \text{C}_6\text{H}_3\text{N}_3 \text{---} \text{CH}_2 \text{---} \text{NH} \\ | \\ \text{N} \end{array} \right]_n$
- (D) BuNa-S : $\left[\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{CH} \right]_n$
39. Which of the following relation is correct based on bond order ?
- (A) Bond order $\propto \frac{1}{\text{Stability}} \propto \frac{1}{\text{Bond length}}$
- (B) Bond order $\propto \frac{1}{\text{Bond length}} \propto \text{Stability}$
- (C) Bond order $\propto \text{Bond length} \propto \frac{1}{\text{Stability}}$
- (D) Bond order $\propto \text{Stability} \propto \text{Bond length}$
40. Which silicate anion is present in talc ?
- (A) $\text{Si}_4\text{O}_{11}^{6-}$ (B) $\text{Si}_4\text{O}_{10}^{4-}$
 (C) $\text{Si}_6\text{O}_{18}^{12-}$ (D) $\text{Si}_2\text{O}_7^{6-}$