

DEPARTMENT OF EDUCATION
CENTRAL TIBETAN ADMINISTRATION, DHARAMSHALA
ENTRANCE EXAMINATION-2009.

CHEMISTRY

Time : 1 hours

Max. Marks 50.

INSTRUCTIONS:

There are fifty questions in this paper. All the questions are of Multiple Choice type and carry equal marks. Each question is followed by four responses marked (a), (b), (c) and (d). Select the one, which is the best in each case and record it clearly against the question number on the answer sheets provided with the paper.

More than one response indicated against an item or overwriting in the answer sheet would deem as incorrect response and no mark will be granted on that.

Question paper along with the answer sheet of the paper should be returned to the invigilator after the completion of the paper or when the time is over which ever is earlier.

Roll No. _____

Marks obtained by the candidate:

Signature of Examiner

- Q.1. Molecular attractions of Gas Particles are negligible at
 (a) High Pressure (b) Low Temp
 (c) Both of the above (d) None of the above
- Q.2. Consider an ideal Gas contained in a vessel. If the inter molecular interaction suddenly begins to act, which will happen
 (a) The pressure decreases (b) The pressure increases
 (c) Pressure remains unchanged (d) The Gas collapses
- Q.3. A 3p orbital has
 (a) Two non-spherical nodes
 (b) Two Spherical nodes
 (c) One spherical and one spherical node
 (d) One spherical and two non-spherical nodes
- Q.4. The Difference in angular momentum associated with the electron in two successive orbits of hydrogen atom is
 (a) $\frac{h}{\pi}$ (b) $\frac{h}{2\pi}$
 (c) $\frac{h}{2}$ (d) $\frac{(n-1)h}{2\pi}$
- Q.5. Which has zero dipole Moment?
 (a) CO₂ (b) SO₂
 (c) NH₃ (d) H₂O
- Q.6. Which has planar structure?
 (a) $\overset{+}{N}H_4$ (b) SCl₄
 (c) XeF₄ (d) XeF₂
- Q.7. c – o – c bond angle in ether molecule is
 (a) 110° (b) 180°
 (c) 90° (d) 109°28'

- Q.8. Highest covalent character is found in which of the following
- (a) CaF_2 (b) $CaCl_2$
(c) $CaBr_2$ (d) CaI_2
- Q.9. The correct formula for peroxide of Mg is
- (a) MgO (b) MgO_4
(c) Mg_2O (d) None of these
- Q.10. Alkali Metals in each period have
- (a) Large size (b) Lowest IE
(c) Least Electro negativity (d) Highest IE
- Q.11. The correct order of solubility of Na_2S , CuS & ZnS in water is
- (a) $CuS > ZnS > Na_2S$ (b) $ZnS > Na_2S > CuS$
(c) $Na_2S > CuS > ZnS$ (d) $Na_2S > ZnS > CuS$
- Q.12. Which of the following species are isoelectronic and iso structural
- $N\bar{O}_3$, CO_3^{-2} , $Cl\bar{O}_3$, SO_3
- (a) $N\bar{O}_3$, CO_3^{-2} (b) SO_3 , $N\bar{O}_3$
(c) ClO_3^{-1} , CO_3^{-2} (d) CO_3^{-2} , SO_3
- Q.13. At what temperature will the volume of a Gas at $0^\circ C$ double itself, pressure remaining constant?
- (a) $-546^\circ C$ (b) 273K
(c) $546^\circ C$ (d) 546K
- Q.14. The maximum no of electrons with $-\frac{1}{2}$ spin in $4f$ sub shell configuration is
- (a) $7e^-$ (b) $4e^-$
(c) Zero (d) None
- Q.15. If the pressure of $\frac{N_2}{H_2}$ mixture in a closed vessel is 100 atm and 20% of mixture reacts, the pressure at the same temp would be
- (a) The same (b) 110 atm
(c) 90 atm (d) 80 atm

Q.16. The number of atoms in n moles of a Gas can be given by

- (a) $\frac{n \times AvNo}{atomicity}$ (b) $n \times AvNo$ atomicity
(c) $\frac{Avno \times atomicity}{n}$ (d) None of these

Q.17. The total no of protons electrons & neutrons in $^{15}_7N$, 15g is

- (a) 13.25×10^{23} (b) 1.325×10^{25}
(c) 6.02×10^{25} (d) 1.326×10^{24}

Q.18. H_3PO_4 is tri basic acid and one of its salts is NaH_2PO_4 what volume of 1M NaOH should be added to 12g NaH_2PO_4 (gMM 120gm) to exactly convert into Na_3PO_4

- (a) 100 ml (b) 300 ml
(c) 200 ml (d) 80 ml

Q.19. 84 gm of a metal carbonate reacts with 40 ml of $\frac{N}{2} H_2SO_4$. The equivalent weight of metal carbonate is

- (a) 84 gm (b) 64 gm
(c) 42 gm (d) 38 gm

Q.20. $H_2O_2 + Na_2CO_3 \rightarrow Na_2O_2 + CO_2 + H_2O$ substance undergoing oxidation is

- (a) H_2O_2 (b) Na_2CO_3
(c) Na_2O_2 (d) None of these

Q.21. In the presence of moisture SO_2 can

- (a) Gain e^- (b) Loose e^-
(c) Act as oxidizing agent (d) None of these

Q.22. The reaction taking place at anode when an aqueous solution of $CuSO_4$ is electrolysed using Pt Electrode is

- (a) $2SO_4^{2-} \rightarrow S_2O_8^{2-} + 2e^-$ (b) $Cu^{+2} + 2e^- \rightarrow Cu$
(c) $2H_2O \rightarrow O_2 + 4H^+ + 4e^-$ (d) $2H^+ + 2e^- \rightarrow H_2$

Q.23. For $Zn + Cu^{+2} \rightarrow Cu + Zn^{+2}$ $E^0 = +1.10V$ at 298C. The emf of this reaction when $1M Cu^{+2}$ & $1M Zn^{+2}$ solution are used at 25^0C is

- (a) 1.10v (b) 1.10v
(c) -1.10v (d) -1.10v

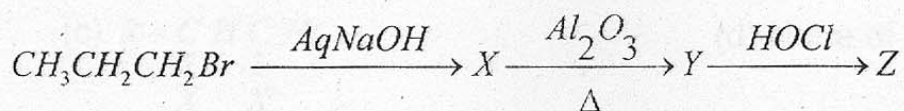
- Q.24. What volume of $K_2Cr_2O_7$ solution is required to oxidize in H^+ solution containing 10gm of $FeSO_4$ (gmm 152 g/Mole)
- (a) 134 ml (b) 65.78 ml
(c) 35 ml (d) None of these
- Q.25. $2S_2O_3^{2-} + I_2 \rightarrow S_4O_6^{2-} + 2I^-$ the equivalent weight of $Na_2S_2O_3$ is equal to
- (a) $\frac{MOwt}{6}$ (b) $2 \times MOwt$
(c) $MOwt$ (d) $\frac{MOwt}{2}$
- Q.26. The no of e^- involved in the change $Fe_3O_4 \rightarrow Fe_2O_3$ is
- (a) 2 (b) 8
(c) 6 (d) 4
- Q.27. Electroplating is made by use of
- (a) Concentration cell (b) Electro chemical cell
(c) Chemical cell (d) Electrolytic cell
- Q.28. Which does not follow octet rule?
- (a) CO_2 (b) $[BCl_4]^{1-}$
(c) SiF_4 (d) PCl_5
- Q.29. On mixing 10ml of CCl_4 & 10ml of benzene the total volume of solution is
- (a) $>20ml$ (b) $<20ml$
(c) $=20ml$ (d) Data is insufficient
- Q.30. At CMC the surfactant molecule undergo
- (a) Association (b) Aggregation
(c) Micelle formation (d) All
- Q.31. The 20% of a reactant decomposes in x hr, half life is 2.5x hr. The unit of rate constant is
- (a) $ML^{-1}Sec^{-1}$ (b) $LM^{-1}Sec^{-1}$
(c) Sec^{-1} (d) None of these

- Q.32. Cyclopentene $\xrightarrow[\text{KMnO}_4]{\text{Alkaline}}$ X , X is
- (a) Cyclopentanol (b) Trans 1, 2 cyclopentanediol
 (c) Cis 1, 2 cyclopentanediol (d) Mixture of B & C

Q.33. The product of Dry distillation of Ca ethanoate is

- (a) Formaldehyde (b) Acetone
 (c) Butanone (d) None of these

Q.34. Find Z in following reaction



- (a) 2 Chloropropan - 1 - ol (b) 1 Chloropropan - 1 - ol
 (c) 1 Chloropropan -2 - ol (d) None of these

Q.35. Iodoform gives a ppt with AgNO_3 on heating but chloroform does not because

- (a) Chloroform is ionic
 (b) Iodoform is covalent
 (c) $C-I$ bond is weaker therefore CHI_3 decomposes but CHCl_3 does not.
 (d) CHI_3 is Less polar than CHCl_3

Q.36. Enzyme which converts starch to Maltose is

- (a) Maltase (b) Zymase
 (c) Invertase (d) Diastase

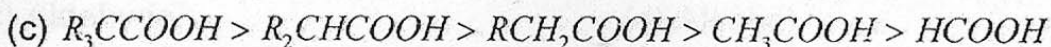
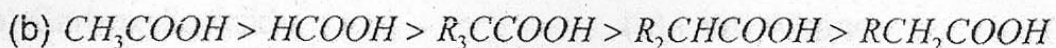
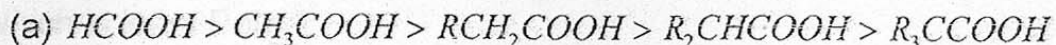
Q.37. Which undergoes Decarboxylation easily?

- (a) $\text{C}_6\text{H}_5\text{COCH}_2\text{COOH}$ (b) $\text{C}_6\text{H}_5\text{COCOOH}$
 (c) $\text{C}_6\text{H}_5\underset{\text{OH}}{\underset{|}{\text{C}}}\text{HCOOH}$ (d) $\text{C}_6\text{H}_5\underset{\text{NH}_2}{\underset{|}{\text{C}}}\text{H}-\text{COOH}$

Q.38. The reaction of HCOOH with conc H_2SO_4 gives

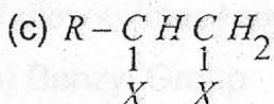
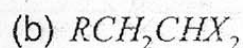
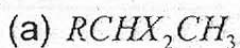
- (a) H_2 (b) CO_2
 (c) CO (d) None of these

Q.39. Reactivity of acids in esterification follows the order



(d) None is correct

Q.40. $RC_2H_4X_2$ gives upon treatment with AqKOH & then HCl (Dil) Ketone. The given compd is



(d) None of these

Q.41. Pinacole is

(a) 3, 3 Dimethyl 2, buton ol

(b) 2,2 Dimethyl butan 1, 4 – di - ol

(c) 2, 3 Dimethyl butan 2, 3 di - ol

(d) None of these

Q.42. Malonic Acid upon heating at 413K gives

(a) Formic Acid

(b) Ethanoic Acid

(c) Propanoic Acid

(d) None of these

Q.43. α and β Glucose are

(a) Position isomers (of – OH group)

(b) Chain isomers

(c) Stereo isomers

(d) All of these

Q.44. Iodoform reaction is not given by

(a) Butan – 2 – one

(b) Pentan – 2 – one

(c) But – 3 – en – 2 – one

(d) Acetone

Q.45. CH_4 cannot be prepared from

(a) wurtz Reaction

(b) Crossed wurtz Reaction

(c) Kolbe's Electrolysis

(d) Any one of these

Q.46. Which is not hydrolysis reaction?

(a) Ester + H_2O / H^+

(b) Alkene + H_2O / H^+

(c) Acid Chloride + H_2O / H^+

(d) Acid Anhydride + H_2O / H^+

Q.47. Which is least Polar?

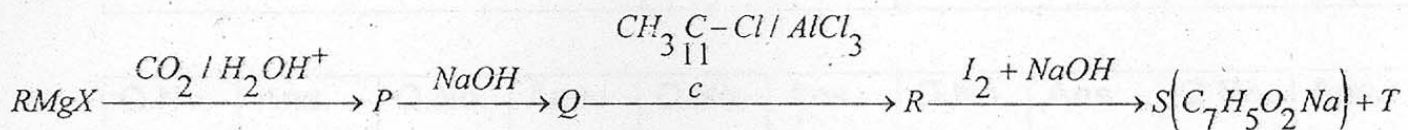
(a) Carboxylic Acid

(b) Nitro Alkane

(c) Aldehyde

(d) Alcohol

Q.48. Following:



(Yellow coloured compd). R is

(a) Benzyl Group

(b) Methyl Group

(c) Phenyle Group

(d) None of these

Q.49. The correct order of Nucleophilic addition is (i) Acetone (ii) Acetaldehyde (iii) Nitro acetaldehyde (iv) Chloroethanal

(a) (iii)>(ii)>(i)>(iv)

(b) (iii)>(iv)>(i)>(ii)

(c) (iii)>(iv)>(ii)>(i)

(d) None

Q.50. Bithional has

(a) Antiseptic Properties

(b) Antibiotic Properties

(c) Both Properties

(d) None of these



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ANSWER SHEET FOR
CHEMISTRY

Roll No.

Q.No.	Ans.	Q.No.	Ans.	Q.No.	Ans.	Q.No.	Ans.	Q.No.	Ans.
1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	
31		32		33		34		35	
36		37		38		39		40	
41		42		43		44		45	
46		47		48		49		50	

Signature of Examiner