FINAL NEET(UG)–2019 EXAMINATION

(Held On Sunday 05th MAY, 2019)

CHEMISTRY

TEST PAPER WITH ANSWER

1. Under isothermal condition, a gas at 300 K expands from 0.1L to 0.25L against a constant external pressure of 2 bar. The work done by the gas is :-
[Given that 1L bar = 100 J]
(1) –30 J (2) 5kJ (3) 25 J (4) 30 J

Ans. (1)

2. A compound is formed by cation C and anion A. The anions form hexagonal close packed (hcp) lattice and the cations occupy 75% of octahedral voids. The formula of the compound is :-
(1) C_2A_3 (2) C_3A_2 (3) C_3A_4 (4) C_4A_3

Ans. (3)

3. pH of a saturated solution of $Ca(OH)_2$ is 9. The solubility product (K_{sp}) of $Ca(OH)_2$ is :-
(1) 0.5×10^{-15} (2) 0.25×10^{-10}
(3) 0.125×10^{-15} (4) 0.5×10^{-10}

Ans. (1)

4. The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber's process is :-
(1) 10 (2) 20 (3) 30 (4) 40

Ans. (3)

5. For an ideal solution, the **correct** option is :-
(1) Δ_{mix} S = 0 at constant T and P
(2) Δ_{mix} V ≠ 0 at constant T and P
(3) Δ_{mix} H = 0 at constant T and P
(4) Δ_{mix} G = 0 at constant T and P

Ans. (3)

6. For a cell involving one electron $E^{\ominus}_{cell}$ = 0.59V at 298 K, the equilibrium constant for the cell reaction is :-

$$\left[\text{Given that } \frac{2.303RT}{F} = 0.059V \text{ at } T = 298K\right]$$

(1) 1.0×10^2 (2) 1.0×10^5
(3) 1.0×10^{10} (4) 1.0×10^{30}

Ans. (3)

7. Among the following, the one that is **not** a green house gas is :-
(1) nitrous oxide (2) methane
(3) ozone (4) sulphur dioxide

Ans. (4)

8. The number of sigma (σ) and pi (π) bonds in pent-2-en-4-yne is :-
(1) 10 σ bonds and 3π bonds
(2) 8 σ bonds and 5π bonds
(3) 11 σ bonds and 2π bonds
(4) 13 σ bonds and no π bond

Ans. (1)

9. Which of the following diatomic molecular species has only π bonds according to Molecular Orbital Theory ?
(1) O_2 (2) N_2 (3) C_2 (4) Be_2

Ans. (3)

10. Which of the following reactions are disproportionation reaction ?
(a) $2Cu^+ \rightarrow Cu^{2+} + Cu^0$
(b) $3MnO_4^{2-} + 4H^+ \rightarrow 2MnO_4^- + MnO_2 + 2H_2O$
(c) $2KMnO_4 \xrightarrow{\Delta} K_2MnO_4 + MnO_2 + O_2$
(d) $2MnO_4^- + 3Mn^{2+} + 2H_2O \rightarrow 5MnO_2 + 4H^{\oplus}$
Select the **correct** option from the following :-
(1) (a) and (b) only (2) (a), (b) and (c)
(3) (a), (c) and (d) (4) (a) and (d) only

Ans. (1)

11. Among the following, the narrow spectrum antibiotic is :-
(1) penicillin G (2) ampicillin
(3) amoxycillin (4) chloramphenicol

Ans. (1)

12. The **correct** order of the basic strength of methyl substituted amines in aqueous solution is :-
(1) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$
(2) $(CH_3)_3N > CH_3NH_2 > (CH_3)_2NH$
(3) $(CH_3)_3N > (CH_3)_2NH > CH_3NH_2$
(4) $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3N$

Ans. (1)

13. Which mixture of the solutions will lead to the formation of negatively charged colloidal [AgI] I^- sol. ?
(1) 50 mL of 1M $AgNO_3$ + 50 mL of 1.5 M KI
(2) 50 mL of 1M $AgNO_3$ + 50 mL of 2 M KI
(3) 50 mL of 2 M $AgNO_3$ + 50 mL of 1.5 M KI
(4) 50 mL of 0.1 M $AgNO_3$ + 50 mL of 0.1 M KI

Ans. (1,2)

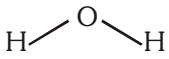
14. Conjugate base for Bronsted acids H_2O and HF are:-
(1) OH^- and H_2F^+ respectively
(2) H_3O^+ and F^-, respectively
(3) OH^- and F^-, respectively
(4) H_3O^+ and H_2F^+, respectively

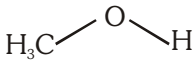
Ans. (3)

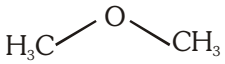
15. Which will make basic buffer ?
(1) 50 mL of 0.1 M NaOH + 25 mL of 0.1 M CH_3COOH
(2) 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1M NaOH
(3) 100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH
(4) 100 mL of 0.1 M HCl + 100 mL of 0.1 M NaOH

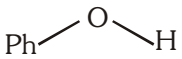
Ans. (3)

16. The compound that is most difficult to protonate is:-

(1) 

(2) 

(3) 

(4) 

Ans. (4)

17. The most suitable reagent for the following conversion is :-

cis-2-butene

(1) Na/liquid NH_3
(2) H_2, Pd/C, quinoline (3) Zn/HCl
(4) Hg^{2+}/H^+, H_2O

Ans. (2)

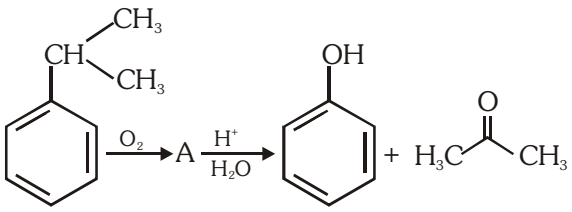
18. Which of the following species is **not** stable ?
(1) $[SiF_6]^{2-}$ (2) $[GeCl_6]^{2-}$
(3) $[Sn(OH)_6]^{2-}$ (4) $[SiCl_6]^{2-}$

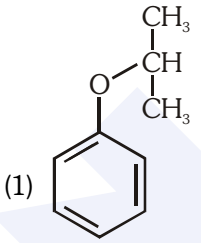
Ans. (4)

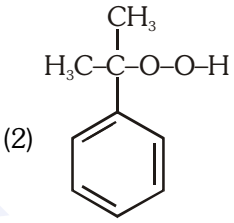
19. Which of the following is an amphoteric hydroxide?
(1) $Sr(OH)_2$ (2) $Ca(OH)_2$
(3) $Mg(OH)_2$ (4) $Be(OH)_2$

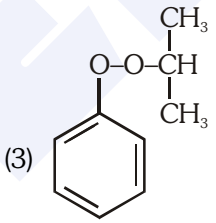
Ans. (4)

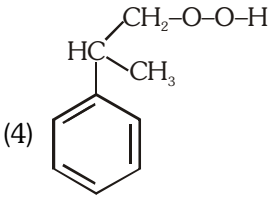
20. The structure of intermediate A in the following reaction is :-



(1) 

(2) 

(3) 

(4) 

Ans. (2)

21. The manganate and permanganate ions are tetrahedral, due to
(1) The π–bonding involves overlap of p–orbitals of oxygen with d–orbitals of manganese
(2) There is no π–bonding
(3) The π–bonding involves overlap of p–orbitals of oxygen with p–orbitals of managanese
(4) The π–bonding involves overlap of d–orbitals of oxygen with d–orbitals of manganese

Ans. (1)

22. For the second period elements the **correct** increasing order of first ionisation enthalpy is :-
(1) Li < Be < B < C < N < O < F < Ne
(2) Li < B < Be < C < O < N < F < Ne
(3) Li < B < Be < C < N < O < F < Ne
(4) Li < Be < B < C < O < N < F < Ne

Ans. (2)

23. If the rate constant for a first order reaction is k, the time (t) required for the completion of 99% of the reaction is given by :-

(1) t = 0.693/k (2) t = 6.909/k

(3) t = 4.606/k (4) t = 2.303/k

Ans. (3)

24. Identify the **incorrect** statement related to PCl_5 from the following :-

(1) Three equatorial P–Cl bonds make an angle of 120° with each other

(2) Two axial P–Cl bonds make an angle of 180° with each other

(3) Axial P–Cl bonds are longer than equatorial P–Cl bonds

(4) PCl_5 molecule is non–reactive

Ans. (4)

25. 4d, 5p, 5f and 6p orbitals are arranged in the order of decreasing energy. The **correct** option is :-

(1) 5f > 6p > 5p > 4d (2) 6p > 5f > 5p > 4d

(3) 6p > 5f > 4d > 5p (4) 5f > 6p > 4d > 5p

Ans. (1)

26. The biodegradable polymer is :-

(1) nylon–6,6 (2) nylon 2–nylon 6

(3) nylon–6 (4) Buna–S

Ans. (2)

27. Match the Xenon compounds in **Column–I** with its structure in **Column–II** and assign the **correct** code:-

Column–I		**Column–II**
(a) XeF_4	(i)	pyramidal
(b) XeF_6	(ii)	square planar
(c) $XeOF_4$	(iii)	distorted octahedral
(d) XeO_3	(iv)	square pyramidal

Code :

	(a)	**(b)**	**(c)**	**(d)**
(1)	(i)	(ii)	(iii)	(iv)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(ii)	(iii)	(i)	(iv)
(4)	(iii)	(iv)	(i)	(ii)

Ans. (2)

28. Which is the **correct** thermal stability order for H_2E (E=O, S, Se, Te and Po) ?

(1) $H_2S < H_2O < H_2Se < H_2Te < H_2Po$

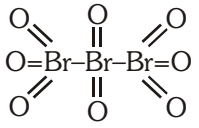
(2) $H_2O < H_2S < H_2Se < H_2Te < H_2Po$

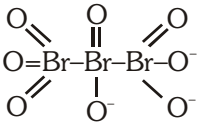
(3) $H_2Po < H_2Te < H_2Se < H_2S < H_2O$

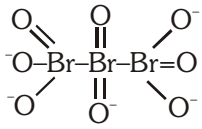
(4) $H_2Se < H_2Te < H_2Po < H_2O < H_2S$

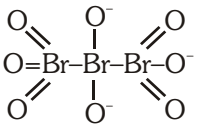
Ans. (3)

29. The **correct** structure of tribromooctaoxide is :-

(1) 

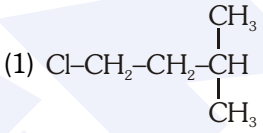
(2) 

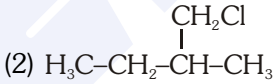
(3) 

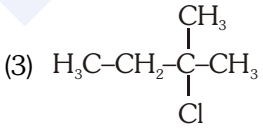
(4) 

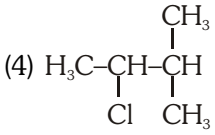
Ans. (1)

30. An alkene "A" on reaction with O_3 and $Zn–H_2O$ gives propanone and ethanal in equimolar ratio. Addition of HCl to alkene "A" gives "B" as the major product. The structure of product "B" is :-

(1) 

(2) 

(3) 

(4) 

Ans. (3)

31. Enzymes that utilize ATP in phosphate transfer require an alkaline earth metal (M) as the cofactor. M is :

(1) Be (2) Mg

(3) Ca (4) Sr

Ans. (2)

32. Which one is malachite from the following ?

(1) $CuFeS_2$ (2) $Cu(OH)_2$

(3) Fe_3O_4 (4) $CuCO_3.Cu(OH)_2$

Ans. (4)

33. Which of the following series of transitions in the spectrum of hydrogen atom falls in visible region ?

(1) Lyman series (2) Balmer series

(3) Paschen series (4) Brackett series

Ans. (2)

34. The mixture that forms maximum boiling azeotrope is :

(1) Water + Nitric acid

(2) Ethanol + Water

(3) Acetone + Carbon disulphide

(4) Heptane + Octane

Ans. (1)

35. For the cell reaction

$2Fe^{3+}(aq) + 2I^{-}(aq) \rightarrow 2Fe^{2+}(aq) + I_2(aq)$

$E^{\ominus}_{cell} = 0.24V$ at 298 K. The standard Gibbs energy $\left(\Delta_r G^{\ominus}\right)$ of the cell reaction is :

[Given that Faraday constant F = 96500 C mol^{-1}]

(1) – 46.32 kJ mol^{-1}

(2) – 23.16 kJ mol^{-1}

(3) 46.32 kJ mol^{-1}

(4) 23.16 kJ mol^{-1}

Ans. (1)

36. In which case change in entropy is negative ?

(1) Evaporation of water

(2) Expansion of a gas at constant temperature

(3) Sublimation of solid to gas

(4) $2H(g) \rightarrow H_2(g)$

Ans. (4)

37. Match the following :

(a) Pure nitrogen	(i) Chlorine
(b) Haber process	(ii) Sulphuric acid
(c) Contact process	(iii) Ammonia
(d) Deacon's process	(iv) Sodium azide or Barium azide

Which of the following is the **correct** option ?

	(a)	(b)	(c)	(d)
(1)	(i)	(ii)	(iii)	(iv)
(2)	(ii)	(iv)	(i)	(iii)
(3)	(iii)	(iv)	(ii)	(i)
(4)	(iv)	(iii)	(ii)	(i)

Ans. (4)

38. Which of the following is **incorrect** statement ?

(1) PbF_4 is covalent in nature

(2) $SiCl_4$ is easily hydrolysed

(3) GeX_4 (X = F, Cl, Br, I) is more stable than GeX_2

(4) SnF_4 is ionic in nature

Ans. (1)

39. The non-essential amino acid among the following is :

(1) valine (2) leucine

(3) alanine (4) lysine

Ans. (3)

40. A gas at 350 K and 15 bar has molar volume 20 percent smaller than that for an ideal gas under the same conditions. The **correct** option about the gas and its compressibility factor (Z) is :

(1) Z > 1 and attractive forces are dominant

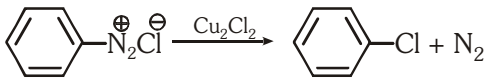
(2) Z > 1 and repulsive forces are dominant

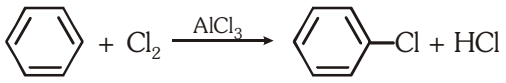
(3) Z < 1 and attractive forces are dominant

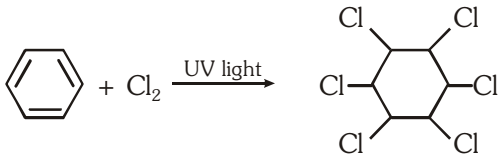
(4) Z < 1 and repulsive forces are dominant

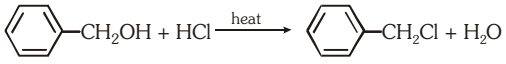
Ans. (3)

41. Among the following, the reaction that proceeds through an electrophilic substitution is :

(1) 

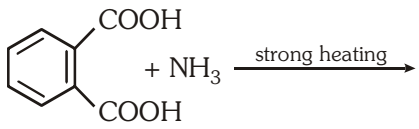
(2) 

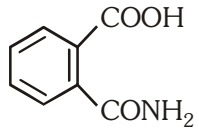
(3) 

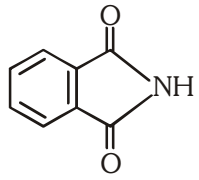
(4) 

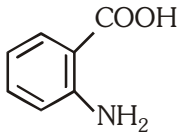
Ans. (2)

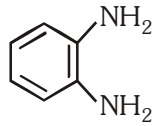
42. The major product of the following reaction is :



(1) 

(2) 

(3) 

(4) 

Ans. (2)

43. For the chemical reaction

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

the **correct** option is :

(1) $-\frac{1}{3}\frac{d[H_2]}{dt} = -\frac{1}{2}\frac{d[NH_3]}{dt}$

(2) $-\frac{d[N_2]}{dt} = 2\frac{d[NH_3]}{dt}$

(3) $-\frac{d[N_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$

(4) $3\frac{d[H_2]}{dt} = 2\frac{d[NH_3]}{dt}$

Ans. (3)

44. What is the **correct** electronic configuration of the central atom in $K_4[Fe(CN)_6]$ based on crystal field theory ?

(1) $t_{2g}^4 e_g^2$ (2) $t_{2g}^6 e_g^0$

(3) $e^3 t_2^3$ (4) $e^4 t_2^2$

Ans. (2)

45. The method used to remove temporary hardness of water is :

(1) Calgon's method

(2) Clark's method

(3) Ion-exchange method

(4) Synthetic resins method

Ans. (2)