

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) C₂A₃ (2) C₃A₂ (3) C₃A₄ (4) C₄A₃
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_{cell}⁰ = 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 × 10² (2) 1.0 × 10⁵
(3) 1.0 × 10¹⁰ (4) 1.0 × 10³⁰
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) O₂ (2) N₂ (3) C₂ (4) Be₂
Ans. (3)

10. Which of the following reactions are disproportionation reaction ?

 (a) 2Cu⁺ → Cu²⁺ + Cu⁰
(b) 3MnO₄²⁻ + 4H⁺ → 2MnO₄⁻ + MnO₂ + 2H₂O
(c) 2KMnO₄ $\xrightarrow{\Delta}$ K₂MnO₄ + MnO₂ + O₂
(d) 2MnO₄⁻ + 3Mn²⁺ + 2H₂O → 5MnO₂ + 4H⁺

 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) amoxicillin (4) chloramphenicol

Ans. (1)

12. The **correct** order of the basic strength of methyl substituted amines in aqueous solution is :-

 (1) (CH₃)₂NH > CH₃NH₂ > (CH₃)₃N
(2) (CH₃)₃N > CH₃NH₂ > (CH₃)₂NH
(3) (CH₃)₃N > (CH₃)₂NH > CH₃NH₂
(4) CH₃NH₂ > (CH₃)₂NH > (CH₃)₃N

Ans. (1)

13. Which mixture of the solutions will lead to the formation of negatively charged colloidal [Ag]I sol. ?

 (1) 50 mL of 1M AgNO₃ + 50 mL of 1.5 M KI
(2) 50 mL of 1M AgNO₃ + 50 mL of 2 M KI
(3) 50 mL of 2 M AgNO₃ + 50 mL of 1.5 M KI
(4) 50 mL of 0.1 M AgNO₃ + 50 mL of 0.1 M KI

Ans. (1,2)

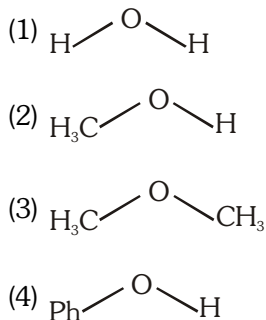
14. Conjugate base for Bronsted acids H_2O and HF are:-
 (1) OH^- and H_2F^+ respectively
 (2) H_3O^+ and F^- , respectively
 (3) OH^- and F^- , respectively
 (4) H_3O^+ and H_2F^+ , respectively

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 0.1 M 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

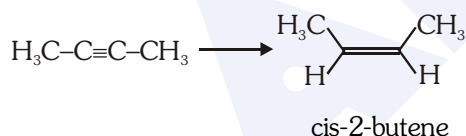
Ans. (3)

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



Ans. (4)

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



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

Ans. (2)

18. Which of the following species is **not** stable ?



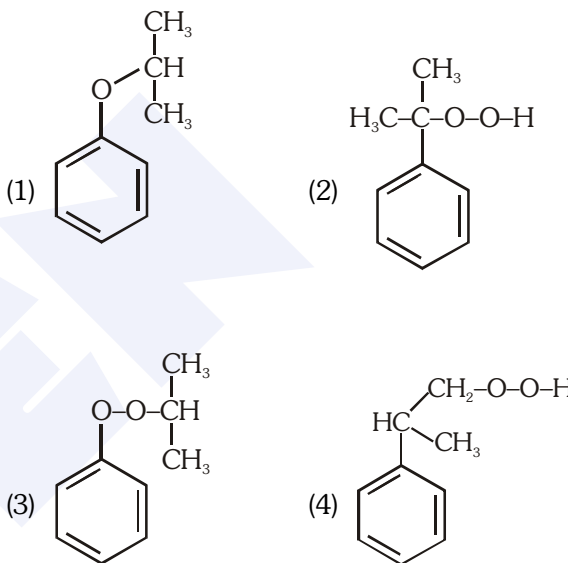
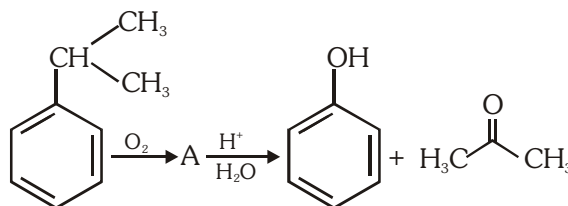
Ans. (4)

19. Which of the following is an amphoteric hydroxide?



Ans. (4)

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



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 manganese
 (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) $\text{Li} < \text{Be} < \text{B} < \text{C} < \text{N} < \text{O} < \text{F} < \text{Ne}$
 (2) $\text{Li} < \text{B} < \text{Be} < \text{C} < \text{O} < \text{N} < \text{F} < \text{Ne}$
 (3) $\text{Li} < \text{B} < \text{Be} < \text{C} < \text{N} < \text{O} < \text{F} < \text{Ne}$
 (4) $\text{Li} < \text{Be} < \text{B} < \text{C} < \text{O} < \text{N} < \text{F} < \text{Ne}$

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, 5d, 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)

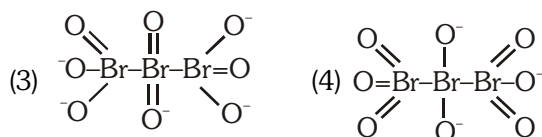
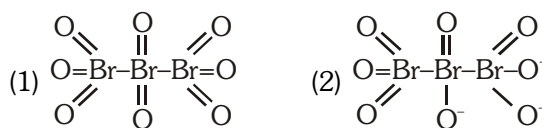
Ans. (2)

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

- (1) $\text{H}_2\text{S} < \text{H}_2\text{O} < \text{H}_2\text{Se} < \text{H}_2\text{Te} < \text{H}_2\text{Po}$
(2) $\text{H}_2\text{O} < \text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te} < \text{H}_2\text{Po}$
(3) $\text{H}_2\text{Po} < \text{H}_2\text{Te} < \text{H}_2\text{Se} < \text{H}_2\text{S} < \text{H}_2\text{O}$
(4) $\text{H}_2\text{Se} < \text{H}_2\text{Te} < \text{H}_2\text{Po} < \text{H}_2\text{O} < \text{H}_2\text{S}$

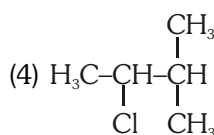
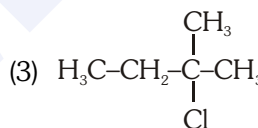
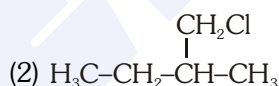
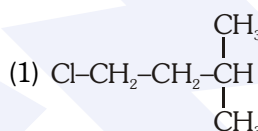
Ans. (3)

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



Ans. (1)

30. An alkene "A" on reaction with O_3 and $\text{Zn-H}_2\text{O}$ 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 :-



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) $\text{Cu}(\text{OH})_2$
(3) Fe_3O_4 (4) $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$

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
 $2\text{Fe}^{3+}(\text{aq}) + 2\text{I}^{-}(\text{aq}) \rightarrow 2\text{Fe}^{2+}(\text{aq}) + \text{I}_2(\text{aq})$
 $E_{\text{cell}}^{\ominus} = 0.24\text{V}$ at 298 K. The standard Gibbs energy

($\Delta_r G^{\ominus}$) of the cell reaction is :

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

- (1) $-46.32\text{ kJ mol}^{-1}$
 (2) $-23.16\text{ kJ mol}^{-1}$
 (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) $2\text{H}(\text{g}) \rightarrow \text{H}_2(\text{g})$

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 ($\text{X} = \text{F}, \text{Cl}, \text{Br}, \text{I}$) is more stable than GeX_2
 (4) SnF_4 is ionic in nature

Ans. (1)

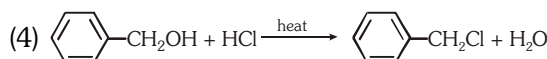
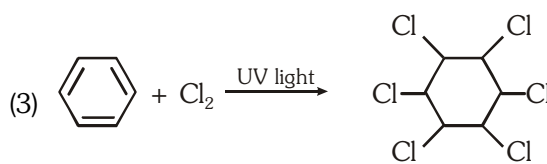
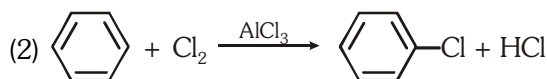
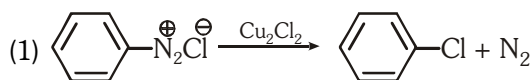
39. The non-essential amino acid among the following is :
 (1) valine (2) leucine
 (3) alanine (4) lysine

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

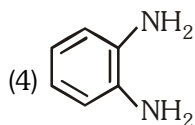
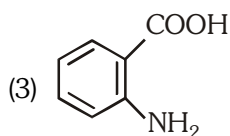
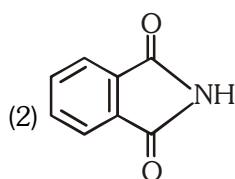
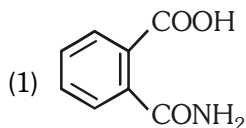
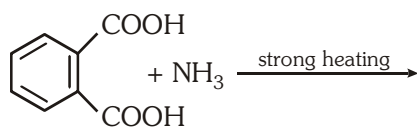
Ans. (3)

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



Ans. (2)

42. The major product of the following reaction is :



Ans. (2)

43. For the chemical reaction
 $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$
 the **correct** option is :

(1) $-\frac{1}{3} \frac{d[\text{H}_2]}{dt} = -\frac{1}{2} \frac{d[\text{NH}_3]}{dt}$

(2) $-\frac{d[\text{N}_2]}{dt} = 2 \frac{d[\text{NH}_3]}{dt}$

(3) $-\frac{d[\text{N}_2]}{dt} = \frac{1}{2} \frac{d[\text{NH}_3]}{dt}$

(4) $3 \frac{d[\text{H}_2]}{dt} = 2 \frac{d[\text{NH}_3]}{dt}$

Ans. (3)

44. What is the **correct** electronic configuration of the central atom in $\text{K}_4[\text{Fe}(\text{CN})_6]$ 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)