

## FINAL NEET(UG)-2019 EXAMINATION

(Held On Sunday 05<sup>th</sup> 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<sub>2</sub>A<sub>3</sub>    (2) C<sub>3</sub>A<sub>2</sub>    (3) C<sub>3</sub>A<sub>4</sub>    (4) C<sub>4</sub>A<sub>3</sub>

**Ans. (3)**

3. pH of a saturated solution of Ca(OH)<sub>2</sub> is 9. The solubility product (K<sub>sp</sub>) of Ca(OH)<sub>2</sub> is :-

(1) 0.5 × 10<sup>-15</sup>    (2) 0.25 × 10<sup>-10</sup>  
(3) 0.125 × 10<sup>-15</sup>    (4) 0.5 × 10<sup>-10</sup>

**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<sub>mix</sub> S = 0 at constant T and P  
(2) Δ<sub>mix</sub> V ≠ 0 at constant T and P  
(3) Δ<sub>mix</sub> H = 0 at constant T and P  
(4) Δ<sub>mix</sub> G = 0 at constant T and P

**Ans. (3)**

6. For a cell involving one electron E<sub>cell</sub><sup>0</sup> = 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<sup>2</sup>    (2) 1.0 × 10<sup>5</sup>  
(3) 1.0 × 10<sup>10</sup>    (4) 1.0 × 10<sup>30</sup>

**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<sub>2</sub>    (2) N<sub>2</sub>    (3) C<sub>2</sub>    (4) Be<sub>2</sub>

**Ans. (3)**

10. Which of the following reactions are disproportionation reaction ?

(a) 2Cu<sup>+</sup> → Cu<sup>2+</sup> + Cu<sup>0</sup>  
(b) 3MnO<sub>4</sub><sup>2-</sup> + 4H<sup>+</sup> → 2MnO<sub>4</sub><sup>-</sup> + MnO<sub>2</sub> + 2H<sub>2</sub>O  
(c) 2KMnO<sub>4</sub>  $\xrightarrow{\Delta}$  K<sub>2</sub>MnO<sub>4</sub> + MnO<sub>2</sub> + O<sub>2</sub>  
(d) 2MnO<sub>4</sub><sup>-</sup> + 3Mn<sup>2+</sup> + 2H<sub>2</sub>O → 5MnO<sub>2</sub> + 4H<sup>+</sup>

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<sub>3</sub>)<sub>2</sub>NH > CH<sub>3</sub>NH<sub>2</sub> > (CH<sub>3</sub>)<sub>3</sub>N  
(2) (CH<sub>3</sub>)<sub>3</sub>N > CH<sub>3</sub>NH<sub>2</sub> > (CH<sub>3</sub>)<sub>2</sub>NH  
(3) (CH<sub>3</sub>)<sub>3</sub>N > (CH<sub>3</sub>)<sub>2</sub>NH > CH<sub>3</sub>NH<sub>2</sub>  
(4) CH<sub>3</sub>NH<sub>2</sub> > (CH<sub>3</sub>)<sub>2</sub>NH > (CH<sub>3</sub>)<sub>3</sub>N

**Ans. (1)**

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

(1) 50 mL of 1M AgNO<sub>3</sub> + 50 mL of 1.5 M KI  
(2) 50 mL of 1M AgNO<sub>3</sub> + 50 mL of 2 M KI  
(3) 50 mL of 2 M AgNO<sub>3</sub> + 50 mL of 1.5 M KI  
(4) 50 mL of 0.1 M AgNO<sub>3</sub> + 50 mL of 0.1 M KI

**Ans. (1,2)**

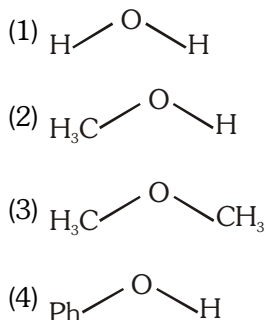
- 14.** Conjugate base for Bronsted acids  $\text{H}_2\text{O}$  and  $\text{HF}$  are:-  
 (1)  $\text{OH}^-$  and  $\text{H}_2\text{F}^+$  respectively  
 (2)  $\text{H}_3\text{O}^+$  and  $\text{F}^-$ , respectively  
 (3)  $\text{OH}^-$  and  $\text{F}^-$ , respectively  
 (4)  $\text{H}_3\text{O}^+$  and  $\text{H}_2\text{F}^+$ , respectively

**Ans. (3)**

- 15.** Which will make basic buffer ?  
 (1) 50 mL of 0.1 M NaOH + 25 mL of 0.1 M  $\text{CH}_3\text{COOH}$   
 (2) 100 mL of 0.1 M  $\text{CH}_3\text{COOH}$  + 100 mL of 0.1 M NaOH  
 (3) 100 mL of 0.1 M HCl + 200 mL of 0.1 M  $\text{NH}_4\text{OH}$   
 (4) 100 mL of 0.1 M HCl + 100 mL of 0.1 M NaOH

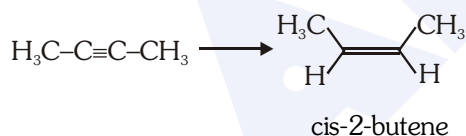
**Ans. (3)**

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



**Ans. (4)**

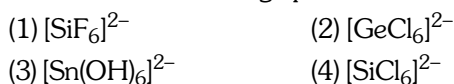
- 17.** The most suitable reagent for the following conversion is :-



- (1) Na/liquid  $\text{NH}_3$   
 (2)  $\text{H}_2$ , Pd/C, quinoline (3) Zn/HCl  
 (4)  $\text{Hg}^{2+}/\text{H}^+$ ,  $\text{H}_2\text{O}$

**Ans. (2)**

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



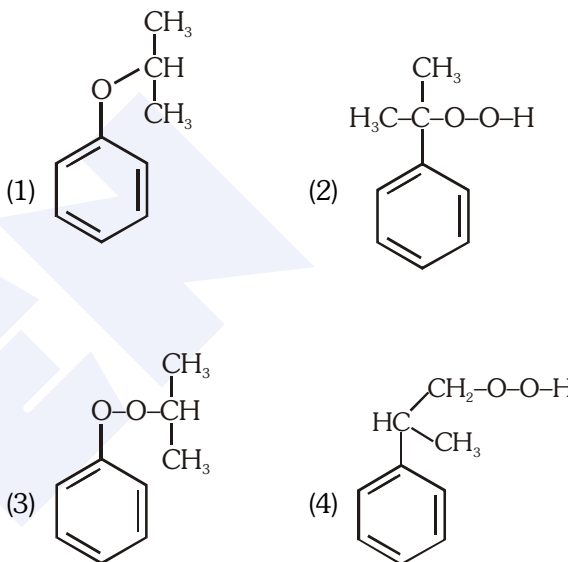
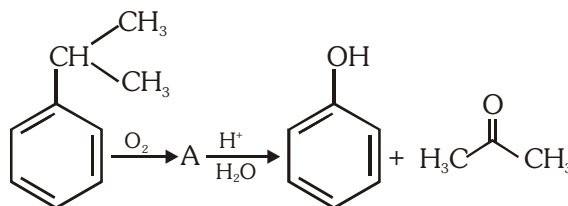
**Ans. (4)**

- 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  $\pi$ -bonding involves overlap of p-orbitals of oxygen with d-orbitals of manganese  
 (2) There is no  $\pi$ -bonding  
 (3) The  $\pi$ -bonding involves overlap of p-orbitals of oxygen with p-orbitals of manganese  
 (4) The  $\pi$ -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 90% 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  $120^\circ$  with each other  
(2) Two axial P-Cl bonds make an angle of  $180^\circ$  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) |

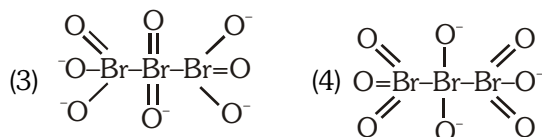
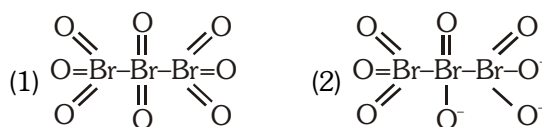
Ans. (2)

28. Which is the correct thermal stability order for  $H_2E$  ( $E=O, S, Se, Te$  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)  $H_2Se < H_2Te < H_2Po < H_2O < H_2S$

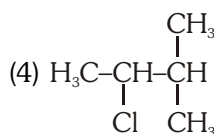
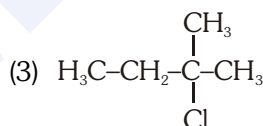
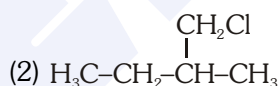
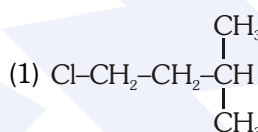
Ans. (3)

29. The correct structure of tribromooxide is :-



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 :-



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)  $CuCO_3 \cdot Cu(OH)_2$

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  
 $2\text{Fe}^{3+}(\text{aq}) + 2\text{I}^{-}(\text{aq}) \rightarrow 2\text{Fe}^{2+}(\text{aq}) + \text{I}_2(\text{aq})$   
 $E_{\text{cell}}^{\ominus} = 0.24\text{V}$  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)  $46.32\text{ kJ mol}^{-1}$   
 (4)  $23.16\text{ kJ mol}^{-1}$

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)  $\text{PbF}_4$  is covalent in nature  
 (2)  $\text{SiCl}_4$  is easily hydrolysed  
 (3)  $\text{GeX}_4$  ( $\text{X} = \text{F}, \text{Cl}, \text{Br}, \text{I}$ ) is more stable than  $\text{GeX}_2$   
 (4)  $\text{SnF}_4$  is ionic in nature

Ans. (1)

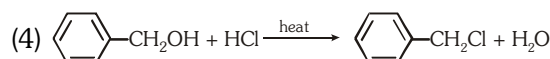
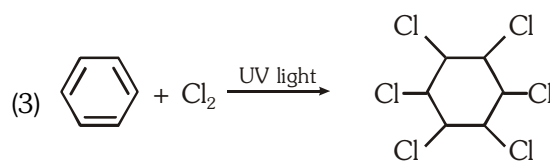
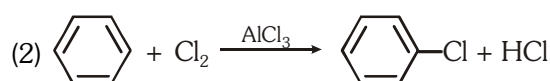
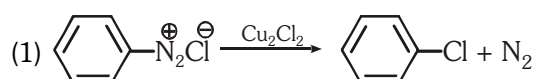
39. The non-essential amino acid among the following is :  
 (1) valine (2) leucine  
 (3) alanine (4) lysine

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

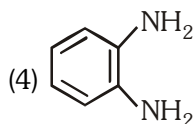
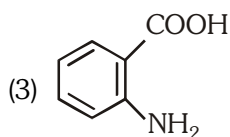
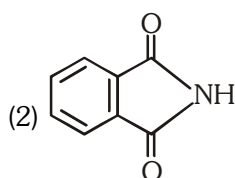
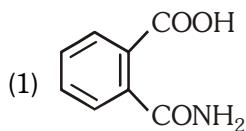
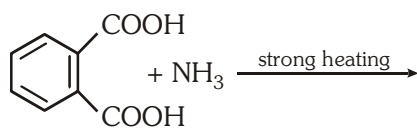
Ans. (3)

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)