

**NEET-UG (KARNATAKA) 2013 TEST PAPER WITH ANSWER KEY
(HELD ON SATURDAY 18th MAY, 2013)**

1. The outer electronic configuration of Gd :-
(At. No. 64) :

- (1) $4f^5 5d^4 6s^1$ (2) $4f^7 5d^1 6s^2$
(3) $4f^3 5d^5 6s^2$ (4) $4f^4 5d^5 6s^1$

Ans. (2)

2. Accumulation of lactic acid ($\text{HC}_3\text{H}_5\text{O}_3$), a monobasic acid in tissues leads to pain and a feeling of fatigue. In a 0.10 M aqueous solution, lactic acid is 3.7% dissociates. The value of dissociation constant, K_a , for this acid will be :-

- (1) 1.4×10^{-5} (2) 1.4×10^{-4}
(3) 3.7×10^{-4} (4) 2.8×10^{-4}

Ans. (2)

3. For a reaction between A and B the order with respect to A is 2 and the order with respect to B is 3. The concentration of both A and B are doubled the rate will increase by a factor of :-

- (1) 12 (2) 16 (3) 32 (4) 10

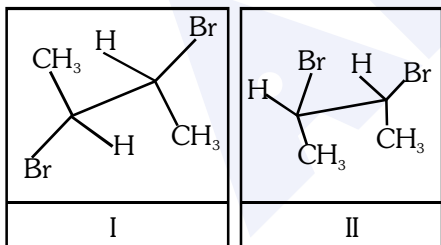
Ans. (3)

4. The metal oxide which cannot be reduced to metal by carbon is :-

- (1) Al_2O_3 (2) PbO (3) ZnO (4) Fe_2O_3

Ans. (1)

5. Given :



I and II are :-

- (1) identical
(2) a pair of conformers
(3) a pair of geometrical isomers
(4) a pair of optical isomers

Ans. (2)

6. Crystal field splitting energy for high spin d^4 octahedral complex is :-

- (1) $-1.2 \Delta_0$ (2) $-0.6 \Delta_0$
(3) $-0.8 \Delta_0$ (4) $-1.6 \Delta_0$

Ans. (2)

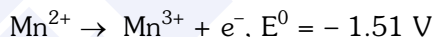
7. Arrange the following in increasing order of stability:-

- (a) $(\text{CH}_3)_2\overset{\oplus}{\text{C}}-\text{CH}_2-\text{CH}_3$ (b) $(\text{CH}_3)_3\overset{\oplus}{\text{C}}$
(c) $(\text{CH}_3)_2\overset{\oplus}{\text{C}}\text{H}$ (d) $\text{CH}_3\overset{\oplus}{\text{C}}\text{H}_2$
(e) $\overset{\oplus}{\text{C}}\text{H}_3$

- (1) $e < d < c < a < b$
(2) $d < e < c < a < b$
(3) $a < e < d < c < b$
(4) $e < d < c < b < a$

Ans. (1)

8. Consider the half-cell reduction reaction :-



The E^0 for the reaction $3 \text{Mn}^{2+} \rightarrow \text{Mn}^0 + 2\text{Mn}^{3+}$, and possibility of the forward reaction are respectively :

- (1) -4.18 V and yes (2) $+0.33 \text{ V}$ and yes
(3) $+2.69 \text{ V}$ and no (4) -2.69 V and no

Ans. (4)

9. How many grams of cobalt metal will be deposited when a solution of cobalt (II) chloride is electrolyzed with a current of 10 amperes for 109 minutes (1 Faraday = 96,500 C; Atomic mass of Co = 59 u):-

- (1) 4.0 (2) 20.0 (3) 40.0 (4) 0.66

Ans. (2)

10. In a particular isomer of $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^0$, the $\text{Cl}-\text{Co}-\text{Cl}$ angle is 90° , the isomer is known as :-

- (1) Optical isomer (2) cis-isomer
(3) position isomer (4) linkage isomer

Ans. (2)

11. Which one of the following statements is not true?

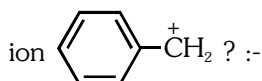
- (1) Clean water would have a BOD value of 5 ppm
(2) Fluoride deficiency in drinking water is harmful. Soluble fluoride is often used to bring its concentration upto 1 ppm.
(3) When the pH of rain water is higher than 6.5, it is called acid rain.
(4) Dissolved Oxygen (DO) in cold water can reach a concentration upto 10 ppm

Ans. (4)

12. When 5 litres of a gas mixture of methane and propane is perfectly combusted at 0°C and 1 atmosphere, 16 litres of oxygen at the same temperature and pressure is consumed. The amount of heat released from this combustion in kJ ($\Delta H_{\text{comb}}(\text{CH}_4) = 890 \text{ kJ mol}^{-1}$, $\Delta H_{\text{comb}}(\text{C}_3\text{H}_8) = 2220 \text{ kJ mol}^{-1}$) is :-
- (1) 38 (2) 317 (3) 477 (4) 32

Ans. (2)

13. What is the hybridisation state of benzyl carbonium



- (1) sp^2 (2) sp^d (3) sp^2d (4) sp^3

Ans. (1)

14. The pair of species that has the same bond order in the following is :-

- (1) CO , NO^+ (2) NO^- , CN^-
 (3) O_2 , N_2 (4) O_2 , B_2

Ans. (1)

15. According to law of photochemical equivalence the energy absorbed (in ergs / mole) is given as ($h = 6.62 \times 10^{-27} \text{ ergs}$, $c = 3 \times 10^{10} \text{ cm s}^{-1}$, $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$) :-

- (1) $\frac{1.196 \times 10^8}{\lambda}$ (2) $\frac{2.859 \times 10^5}{\lambda}$
 (3) $\frac{2.859 \times 10^{16}}{\lambda}$ (4) $\frac{1.196 \times 10^{16}}{\lambda}$

Ans. (1)

16. Three thermochemical equations are given below:-

- (i) $\text{C}_{(\text{graphite})} + \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}); \Delta_r H^\circ = x \text{ kJ mol}^{-1}$
 (ii) $\text{C}_{(\text{graphite})} + 1/2 \text{ O}_2(\text{g}) \rightarrow \text{CO}(\text{g}); \Delta_r H^\circ = y \text{ kJ mol}^{-1}$
 (iii) $\text{CO}(\text{g}) + 1/2 \text{ O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}); \Delta_r H^\circ = z \text{ kJ mol}^{-1}$

Based on the above equations, find out which of the relationship given below is correct :-

- (1) $z = x + y$ (2) $x = y + z$
 (3) $y = 2z - x$ (4) $x = y - z$

Ans. (2)

17. Which one of the following arrangements represents the correct order of least negative to most negative electron gain enthalpy for C, Ca, Al, F and O ?

- (1) $\text{Al} < \text{Ca} < \text{O} < \text{C} < \text{F}$
 (2) $\text{Al} < \text{O} < \text{C} < \text{Ca} < \text{F}$
 (3) $\text{C} < \text{F} < \text{O} < \text{Al} < \text{Ca}$
 (4) $\text{Ca} < \text{Al} < \text{C} < \text{O} < \text{F}$

Ans. (4)

18. The anion of acetylacetonate (acac) forms $\text{Co}(\text{acac})_3$ chelate with Co^{3+} . The rings of the chelate are :-
- (1) Five membered (2) Four membered
 (3) Six membered (4) Three membered

Ans. (3)

19. At 100°C the K_w of water is 55 times its value at 25°C. What will be the pH of neutral solution ? ($\log 55 = 1.74$)

- (1) 7.00 (2) 7.87 (3) 5.13 (4) 6.13

Ans. (4)

20. Identify the incorrect statements, regarding the molecule XeO_4 :-

- (1) XeO_4 molecule is square planar
 (2) There are four $p\pi - d\pi$ bonds
 (3) There are four $sp^3 - p, \sigma$ bonds
 (4) XeO_4 molecule is tetrahedral

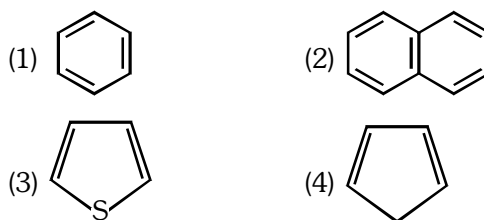
Ans. (1)

21. In Castner-Kellner cell for production of sodium hydroxide :-

- (1) brine is electrolyzed using graphite electrodes
 (2) molten sodium chloride is electrolysed
 (3) sodium amalgam is formed at mercury cathode
 (4) brine is electrolyzed with Pt electrodes

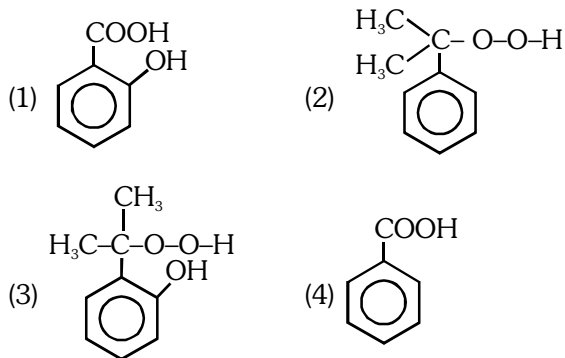
Ans. (3)

22. Which of the following chemical system is non aromatic :-



Ans. (4)

23. Phenol is distilled with Zn dust followed by Friedel Crafts alkylation with propyl chloride in the presence of AlCl_3 to give a compound (B). (B) is oxidised in the presence of air to form the compound (C). The structural formula of (C) is :-



Ans. (2)

24. Nitrogen detection in an organic compound is carried out by Lassaigne's test. The blue colour formed corresponds to which of the following formulae :-

- (1) $\text{Fe}_3[\text{Fe}(\text{CN})_6]_2$ (2) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$
(3) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_2$ (4) $\text{Fe}_3[\text{Fe}(\text{CN})_6]_3$

Ans. (2)

25. Homolytic fission of the following alkanes form free radicals $\text{CH}_3-\dot{\text{C}}\text{H}_2$, $\text{CH}_3-\dot{\text{C}}\text{H}-\text{CH}_3$, $(\text{CH}_3)_2\dot{\text{C}}\text{H}-\text{CH}_3$, $\text{CH}_3-\dot{\text{C}}\text{H}-\text{CH}_2$, $(\text{CH}_3)_2\dot{\text{C}}$ Increasing order of Stability of the radicals is :-

- (1) $(\text{CH}_3)_2\dot{\text{C}}-\text{CH}_2\text{CH}_3 < \text{CH}_3-\dot{\text{C}}\text{H}-\text{CH}_3$
 $< \text{CH}_3-\dot{\text{C}}\text{H}_2 < (\text{CH}_3)_3\dot{\text{C}}$

- (2) $\text{CH}_3-\dot{\text{C}}\text{H}_2 < \text{CH}_3-\dot{\text{C}}\text{H}-\text{CH}_3$
 $< (\text{CH}_3)_2\dot{\text{C}}-\text{CH}_2\text{CH}_3 < (\text{CH}_3)_3\dot{\text{C}}$

- (3) $\text{CH}_3-\dot{\text{C}}\text{H}_2 < \text{CH}_3-\dot{\text{C}}\text{H}-\text{CH}_3 < (\text{CH}_3)_3\dot{\text{C}}$
 $< (\text{CH}_3)_2\dot{\text{C}}-\text{CH}_2\text{CH}_3$

- (4) $(\text{CH}_3)_3\dot{\text{C}} < (\text{CH}_3)_2\dot{\text{C}}-\text{CH}_2\text{CH}_3$
 $< \text{CH}_3-\dot{\text{C}}\text{H}-\text{CH}_3 < \text{CH}_3-\dot{\text{C}}\text{H}_2$

Ans. (2)

26. Which statement is wrong ?

- (1) Beryl is an example of cyclic silicate
(2) Mg_2SiO_4 is orthosilicate.
(3) Basic structural unit in silicates is the SiO_2 tetrahedron.
(4) Feldspars are not aluminosilicates.

Ans. (4)

27. The outer orbitals of C in ethene molecule can be considered to be hybridized to give three equivalent sp^2 orbitals. The total number of sigma (σ) and pi (π) bonds in ethene molecule is :-

- (1) 3 sigma (σ) and 2 pi (π) bonds
(2) 4 sigma (σ) and 1 pi (π) bonds
(3) 5 sigma (σ) and 1 pi (π) bonds
(4) 1 sigma (σ) and 2 pi (π) bonds

Ans. (3)

28. Which condition is not satisfied by an ideal solution?

- (1) $\Delta_{\text{mix}} V = 0$
(2) $\Delta_{\text{mix}} S = 0$
(3) Obedience to Raoult's Law
(4) $\Delta_{\text{mix}} H = 0$

Ans. (2)

29. The dissociation constant of a weak acid is 1×10^{-4} in order to prepare a buffer solution with a pH = 5 the [salt] / [Acid] ratio should be :-

- (1) 4 : 5 (2) 10 : 1 (3) 5 : 4 (4) 1 : 10

Ans. (2)

30. What is the density of N_2 gas at 227°C and 5.00 atm. pressure ? ($R = 0.082 \text{ L Atm K}^{-1} \text{ mol}^{-1}$)

- (1) 1.40 g/mL (2) 2.81 g/mL
(3) 3.41 g/mL (4) 0.29 g/mL

Ans. (3)

31. The correct IUPAC name for $[\text{CrF}_2(\text{en})_2]\text{Cl}$ is :-

- (1) Chloro difluorido ethylene diaminechromium (III) chloride
(2) Difluoridobis (ethylene diamine) chromium (III) chloride
(3) Difluorobis-(ethylene diamine)chromium(III) chloride
(4) chloro difluoridobis (ethylene diamine) chromium (III)

Ans. (2)

32. Dettol is the mixture of :-

- (1) Chloroxylenol and Bithionol
(2) Chloroxylenol and Terpineol
(3) Phenol and Iodine
(4) Terpineol and Bithionol

Ans. (2)

33. A reaction is 50% complete in 2 hours and 75% complete in 4 hours. The order of reaction is :-

- (1) 1 (2) 2 (3) 3 (4) 0

Ans. (1)

34. The values of K_{sp} of CaCO_3 and CaC_2O_4 are 4.7×10^{-9} and 1.3×10^{-9} respectively at 25°C . If the mixture of these two is washed with water, what is the concentration of Ca^{2+} ions in water?

- (1) $5.831 \times 10^{-5} \text{ M}$ (2) $6.856 \times 10^{-5} \text{ M}$
(3) $3.606 \times 10^{-5} \text{ M}$ (4) $7.746 \times 10^{-5} \text{ M}$

Ans. (1)

35. In which of the following pair both the species have sp^3 hybridization ?:-

- (1) SiF_4 , BeH_2 (2) NF_3 , H_2O
(3) NF_3 , BF_3 (4) H_2S , BF_3

Ans. (2)

36. In DNA, the linkages between different nitrogenous bases are :-
 (1) Phosphate linkage
 (2) H-bonding
 (3) Glycosidic linkage
 (4) Peptide linkage

Ans. (2)

37. Which among the following is a paramagnetic complex :-

- (1) $[\text{Co}(\text{NH}_3)_6]^{3+}$
 (2) $[\text{Pt}(\text{en})\text{Cl}_2]$
 (3) $[\text{CoBr}_4]^{2-}$
 (4) $\text{Mo}(\text{CO})_6$

(At. No. Mo = 42, Pt = 78)

Ans. (3)

38. Sc (Z = 21) is a transition element but Zn (Z = 30) is not because :-

- (1) Both Sc^{3+} and Zn^{2+} ions are colourless and form white compounds
 (2) In case of Sc, 3d orbitals are partially filled but in Zn these are filled.
 (3) Last electron is assumed to be added to 4s level in case of Zn
 (4) Both Sc and Zn do not exhibit variable oxidation states

Ans. (2)

39. In an experiment it showed that 10 mL of 0.05 M solution of chloride required 10 mL of 0.1 M solution of AgNO_3 , which of the following will be the formula of the chloride (X stands for the symbol of the element other than chlorine) :-

- (1) X_2Cl_2
 (2) XCl_2
 (3) XCl_4
 (4) X_2Cl

Ans. (2)

40. Which is diamagnetic ?

- (1) $[\text{Co}(\text{F}_6)]^{3-}$
 (2) $[\text{Ni}(\text{CN})_4]^{2-}$
 (3) $[\text{NiCl}_4]^{2-}$
 (4) $[\text{Fe}(\text{CN})_6]^{8-}$

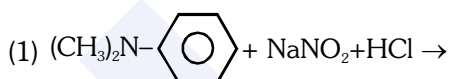
Ans. (2)

41. On hydrolysis of a "compound", two compounds, are obtained. One of which on treatment with sodium nitrite and hydrochloric acid gives a product which does not respond to iodoform test. The second one reduces Tollen's reagent and Fehling's solution The "Compound" is :-

- (1) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NC}$
 (2) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CN}$
 (3) $\text{CH}_3\text{CH}_2\text{CH}_2\text{ON}=\text{O}$
 (4) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CON}(\text{CH}_3)_2$

Ans. (1)

42. Some reactions of amines are given. Which one is not correct ?



- (2) $\text{CH}_3\text{CH}_2\text{NH}_2 + \text{HNO}_2 \rightarrow \text{CH}_3\text{CH}_2\text{OH} + \text{N}_2$
 (3) $\text{CH}_3\text{NH}_2 + \text{C}_6\text{H}_5\text{SO}_2\text{Cl} \rightarrow \text{CH}_3\text{NHSO}_2\text{C}_6\text{H}_5$
 (4) $(\text{CH}_3)_2\text{NH} + \text{NaNO}_2 + \text{HCl} \rightarrow (\text{CH}_3)_2\text{N}-\text{N}=\text{O}$

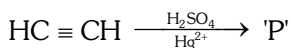
Ans. (1)

43. In which of the following ionization processes the bond energy increases and the magnetic behaviour changes from paramagnetic to diamagnetic :-

- (1) $\text{O}_2 \rightarrow \text{O}_2^+$ (2) $\text{C}_2 \rightarrow \text{C}_2^+$
 (3) $\text{NO} \rightarrow \text{NO}^+$ (4) $\text{N}_2 \rightarrow \text{N}_2^+$

Ans. (3)

44. In the following reaction :



Product 'P' will not give

- (1) Tollen's reagent test
 (2) Brady's reagent test
 (3) Victor Meyer test
 (4) Iodoform test

Ans. (3)

45. Number of isomeric alcohols of molecular formula $\text{C}_6\text{H}_{14}\text{O}$ which give positive iodoform test is :-

- (1) Three (2) Four
 (3) Five (4) Two

Ans. (2)