



CHEMISTRY

BOOKS - NAGEEN CHEMISTRY (ENGLISH)

SAMPLE QUESTION PAPER 03

Questions

1. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

(Linear, four, Heisenberg, three, tetrahedral, bipyramidal 180° , trigonal, 109° , two, Linear, $109^\circ 28'$, Zeeman, de-Broglie, atomic nuclear, one).

The uncertainty principle and the concept of wave nature of matter were proposed by _____ and _____ respectively.



[Watch Video Solution](#)

2. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

(Linear, four, Heisenberg, three, tetrahedral, bipyramidal 180° , trigonal, 109° , two, Linear, $109^\circ 28'$, Zeeman, de-Broglie, atomic nuclear, one).

Methane molecule is _____ in shape with all bond angles equal to _____.

 [Watch Video Solution](#)

3. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

(Linear, four, Heisenberg, three, tetrahedral, bipyramidal 180° , trigonal, 109° , two, Linear, $109^\circ 28'$, Zeeman, de-Broglie, atomic nuclear, one).

Methane molecule is _____ in shape with all bond angles equal to _____.

 [Watch Video Solution](#)

4. Fill in the blanks by choosing the appropriate word/words from those given in the brackets:

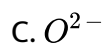
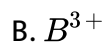
(Linear, four, Heisenberg, three, tetrahedral, bipyramidal 180° , trigonal, 109° , two, Linear, $109^\circ 28'$, Zeeman, de-Broglie, atomic nuclear, one).

The neopentane contains _____ 1° and _____ 4° carbon atoms.



[Watch Video Solution](#)

5. Which one of the following ions has the highest value of ionic radius?



Answer: C



[Watch Video Solution](#)

6. In which of the following molecule/ion all the bonds are not equal? A

XeF_4 B BF_4^- C C_2H_4 D SiF_4

A. SF_4

B. SiF_4

C. XeF_4

D. BF_4^-

Answer: A



[Watch Video Solution](#)

7. Fill in the blanks by using the correct word/term given in the brackets.

The hydrogen ion concentration of a solution with pH = 3 is ____ than the solution with pH = 6. (greater/less)

A. 3.98×10^{-6}

B. 3.68×10^{-6}

C. 3.88×10^6

D. 3.98×10^8

Answer: A



Watch Video Solution

8. Out of the following, the alkene that exhibits optical isomerism is

A. 3-methyl-2-pentene

B. 4-methyl-1-pentene

C. 3-methyl-1-pentene

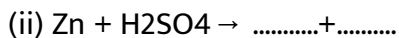
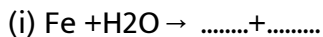
D. 2-methyl-2-pentene

Answer: C



Watch Video Solution

9. Complete and balance the following equations:



 [Watch Video Solution](#)

10. What is an ideal gas?

 [Watch Video Solution](#)

11. State one important significance of Charles Law in everyday life.

 [Watch Video Solution](#)

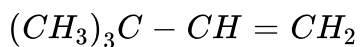
12. Predict the sign of ΔG for a reaction that is exothermic and accompanied by an increase in entropy.

 [Watch Video Solution](#)

13. What does $\Delta H = q_p$ refers to?

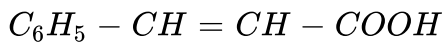
 [Watch Video Solution](#)

14. Give IUPAC name of the following compounds:



 [Watch Video Solution](#)

15. Write the systematic IUPAC names of the following compounds :



 [Watch Video Solution](#)

16. What is the functional isomer of ethanol ?

 [Watch Video Solution](#)

17. What is meant by 5 ppm $CaCO_3$ solution?

 [Watch Video Solution](#)

18. In a chemical reaction, what happens to the reactant which is taken in excess?

 [Watch Video Solution](#)

19. 0.3780g of an organic chloro compound gave 0.5740g of silver chloride. Calculate the percentage of chlorine in the compound.

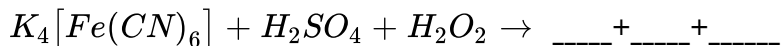
 [Watch Video Solution](#)

20. In the estimation of sulphur by Carius method, 0.468 g of an organic sulphur compound afforded 0.668 g of barium sulphate. Find out the percentage of sulphur in the given compound.



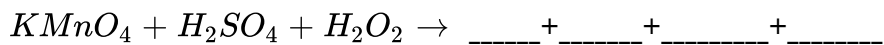
Watch Video Solution

21. Complete and balance the following equations:



Watch Video Solution

22. Complete and balance the following equations:



Watch Video Solution

23. Give reasons why?

Ionic compounds are soluble in water



Watch Video Solution

24. Write the structural formula of the compounds having the following IUPAC names

2, 5-dimethylheptane

 [Watch Video Solution](#)

25. Write the structural formula of the compounds having the following IUPAC names

6-chloro-5-ethyl-2, 4, 4-trimethylhexane-1-nitrile

 [Watch Video Solution](#)

26. Beryllium and magnesium do not give colour to flame whereas other alkaline earth metals do so. Why ?

 [Watch Video Solution](#)

27. How will you distinguish pentane from 1-pentene ?

 [Watch Video Solution](#)

28. What happens when HBr is added to propene

 [Watch Video Solution](#)

29. What happens when propene is treated with chlorine at 773 K?

 [Watch Video Solution](#)

30. Give reason: Chlorine liberates iodine from KI solution

 [Watch Video Solution](#)

31. How many electrons are unpaired in

He

 [Watch Video Solution](#)

32. How many electrons are unpaired in

C

 [Watch Video Solution](#)

33. How many electrons are unpaired in

N

 [Watch Video Solution](#)

34. How many electrons are unpaired in

K



[Watch Video Solution](#)

35. At room temperature, ammonia gas at 1 atm pressure and hydrogen chloride gas at P atm pressure are allowed to effuse through identical pin holes from opposite ends of a glass tube of one metre length and of uniform cross section. Ammonium chloride is first formed at a distance of 60 cm from the end through which HCl gas is sent in. What is the value of P ?

[Watch Video Solution](#)

36. A 4: 1 molar mixture of He and CH_4 is contained in a vessel at 20 bar pressure. Due to a hole in the vessel, the gas mixture leaks out. What is the composition of the mixture effusing out initially?

[Watch Video Solution](#)

37. Write the balance equation for the following

Action of heat on $Na_2CO_3 \cdot 10H_2O$

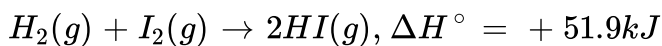
 [Watch Video Solution](#)

38. Write a balanaed chemical equation for each of the following:

Action of heat on aluminium hydroxide

 [Watch Video Solution](#)

39. Calculate the standard free energy change for the following reaction at $27^\circ C$.



[Given : $\Delta S_{H_2}^\circ = 130.6JK^{-1}mol^{-1}$

$$\Delta S_{I_2}^\circ = 116.7JK^{-1}mol^{-1}$$

$$\Delta S_{HI}^\circ = 206.3JK^{-1}mol^{-1}].$$

Predict whether the reaction is feasible at $27^\circ C$ or not.

 [Watch Video Solution](#)

[Watch Video Solution](#)

40. Define the term standard free energy change (ΔG°). How is it related to the equilibrium constant K ?

 [Watch Video Solution](#)

41. Comment on the spontaneity of a process when

$$\Delta H < 0, T\Delta S > 0$$

 [Watch Video Solution](#)

42. Comment on the spontaneity of a process when

$$\Delta H > 0, T\Delta S < 0$$

 [Watch Video Solution](#)

43. Comment on the spontaneity of a process when

$$\Delta H > 0, T\Delta S > 0 \text{ and } T\Delta S < \Delta H$$

 [Watch Video Solution](#)

44. Comment on the spontaneity of a process when

$$\Delta H < 0, T\Delta S > 0$$

 [Watch Video Solution](#)

45. What is smog and how it is formed?

 [Watch Video Solution](#)

46. Define metamerism. What type of compounds do show it? Give an example.

 [Watch Video Solution](#)

47. Discuss the shape of the BCl_3 molecules using VSEPR model .

 [Watch Video Solution](#)

48. On the basis of VSEPR theory, predict the shapes of the following molecules :



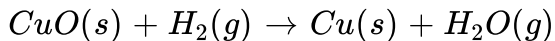
 [Watch Video Solution](#)

49. Discuss the shape of the following molecules using the VSEPR model:



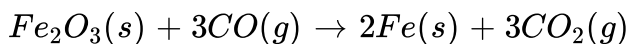
 [Watch Video Solution](#)

50. Justify that the following reactions are redox reactions :



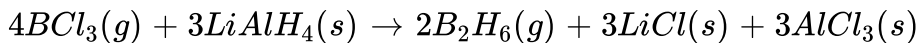
 [Watch Video Solution](#)

51. Justify that the following reactions are redox reactions :



 [Watch Video Solution](#)

52. Justify that the following reactions are redox reactions :



 [Watch Video Solution](#)

53. Write formulase for the following compounds :

Mg(II) chloride



[Watch Video Solution](#)

54. Write formulas for the following compounds :

Nickel (II) sulphate



[Watch Video Solution](#)

55. Write formulas for the following compounds :

Tin (IV) oxide



[Watch Video Solution](#)

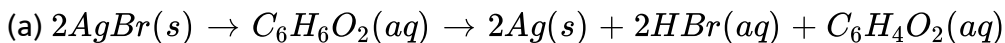
56. Write formulas for the following compounds :

Thallium (I) sulphate

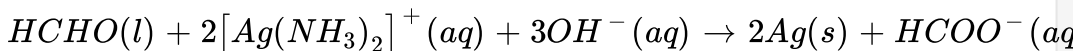


[Watch Video Solution](#)

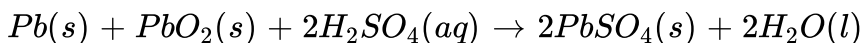
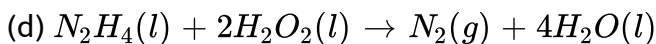
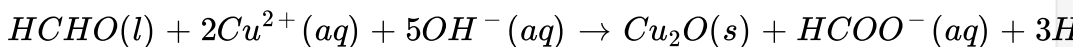
57. Identify the substance oxidised and reduced, oxidising agent and reducing agent for each of the following reactions



(b)



(c)



Watch Video Solution

58. Calculate the oxidation number of sulphur, chromium and nitrogen in

H_2SO_5 , $Cr_2O_7^{2-}$ and NO_3^- . Suggest structure of these compounds.

Count for the fallacy.



Watch Video Solution

59. Explain why A branched chain alkane possesses lower boiling point than the corresponding straight chain alkane.

 [Watch Video Solution](#)

60. Why do alkenes and alkynes undergo addition reactions ? Describe some important addition reactions of alkenes and alkynes.

 [Watch Video Solution](#)

61. How will you convert benzene into

- (i) p-nitrobromobenzene
- (ii) m-nitrochlorobenzene
- (iii) p -nitrotoluene
- (iv) acetophenone

 [Watch Video Solution](#)

62. How will you convert the following: (Give balanced equation)

Ethyne to methane

 [Watch Video Solution](#)

63. How will you bring out the following conversions ?

Ethene to ethyne

 [Watch Video Solution](#)

64. An alkene 'A' contains three C - C, eight C - H (σ) bonds and one C - C (π) bond. 'A' on ozonolysis gives two moles of an aldehyde of molar mass 44 u. Write IUPAC name of 'A'.

 [Watch Video Solution](#)

65. Draw the cis and trans structures of hex-2-ene. Which isomer will have higher b.p. and why?



Watch Video Solution

66. PCl_5 is 47.1% dissociated at 18°C and one atmospheric pressure.

Calculate the value of K_p .



Watch Video Solution

67. The solubility product of $BaSO_4$ at 298 K is 1.08×10^{-10} . What is the minimum concentration of SO_4^{2-} ions required to precipitate $BaSO_4$ from a 0.01 M solution of $BaCl_2$



Watch Video Solution

68. Calculate the pH value of the following

0.001 M HCl



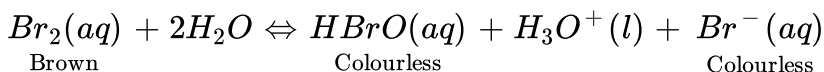
Watch Video Solution

69. Calculate the pH value of the following

0.01 M NaOH.

 [Watch Video Solution](#)

70. Bromine water is brown and weakly acidic due to following equilibrium :



When sodium hydroxide is added to the solution , the solution becomes colourless but the colour return when hydrochloric acid is added. Explain this observation.

 [Watch Video Solution](#)

71. Sort out the Lewis acids and Lewis bases among the following:

Cl^- , BCl_3 , SO_2 , OH^- , Fe^{3+} , SnCl_4 , Ni , CH_3OH , NH_3 ?

 [Watch Video Solution](#)

