



CHEMISTRY

BOOKS - OSWAAL PUBLICATION

Solved Paper 2017-1

Excercise

1. Classify the following into meta or ortho and para directing groups.: – CN



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Exercise

1. State Avogadro's law.

How many atoms of Hydrogen are present in 1 mole of water?

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2. Give the ideal gas equation for n moles of a gas.

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3. Write the conjugate base of HCO_3^- .



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4. Define electronegativity.

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5. Which metal can displace hydrogen from dilute acids from the following data.

$$E_{Zn/Zn^{2+}} = -0.76V. E_{Cu/Cu^{2+}} = 0.343V$$

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6. Give the chemical formula of washing soda.



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7. What is dry ice?

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8. Mention the type of hybridization of carbon in graphite.

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9. Write the IUPAC name of



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10. Name the organic product obtained when sodium benzoate is treated with sodalime.

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11. Define mole. Calculate number of moles is 49 g H_2SO_4 (Atomic Mass of $H = 1$, $O = 16$, $S = 32$)

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12. What do you mean by critical volume (V_c)? Give the unit of coefficient of viscosity.

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13. Give any two difference between σ and π bond.

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14. What happens when sodium metal is heated in air?

Give equation.

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15. Why carbon monoxide is poisonous? Explain.

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16. Write a note on geometrical isomerism in 2-butene.

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17. What are electrophiles? Give one example.

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18. What is meant by Biochemical Oxygen Demand (BOD)? What is its significance?

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19. Name any one gas pollutant that can pollute environment.

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20. Write a brief note on s,p and d block elements.

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21. Discuss the sp^2 hybridisation in BCl_3 molecule.

Give the orbital picture.

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22. Write any three postulates of VSEPR theory.

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23. Write the molecular orbital electronic configuration for carbon monoxide molecule. Calculate its bond order and comment on its magnetic property.

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24. Balance the redox reaction using oxidation number method: $MnO_4^- (aq) \rightarrow MnO_2(s) + BrO_3^- (aq)$ (in acidic medium)

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25. Complete the reaction: $CO(g) + H_2O(g) \xrightarrow{\Delta}$

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26. Complete the reaction: $CO(g) + H_2O(g) \xrightarrow{\Delta}$

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27. Complete the reaction: $Zn(s) + 2H^+(aq) \rightarrow$

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28. Write the equations during the preparation of sodium carbonate by solvay process.

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29. Graphite is a good conductor of electricity. Give reason.

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30. Give the chemical formula of borazine.

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31. Complete the equation:- $HCOOH \xrightarrow[373K]{conc. H_2SO_4}$

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32. An organic compound contains 4.05% hydrogen, 24.26% carbon and 71.67% chlorine. Its molecular mass is 98.96. Find its empirical and molecular formula (Atomic mass of $H = 1$, $C = 12$, $Cl = 35.45$)



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33. Calculate the molar mass of glucose.



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34. State the three postulates of Bohr's theory of hydrogen atom.

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35. Write the de Broglie's equation.

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36. Name the orbital when $n = 3$ and $l = 2$

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37. Name the four quantum numbers and mention what they indicate.

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38. State Aufbau principle.

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39. Write three postulates of Kinetic theory of gases.

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40. On a ship sailing in pacific ocean where temperature is 23.4°C . a ballon is filled with 2L air
What will be the volume of the balloon when ship reaches indian ocean where temperature is 26.1°C ?



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41. State Hess's law of constant heat summation.



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42. Calculate ΔG° for conversion of oxygen to ozone

$3/2O_2(g) \rightarrow O_3(g)$ at 298K if $K_p = 2.47 \times 10^{-29}$



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43. In the equation

$2H_2(g) + O_2(g) \rightarrow 2H_2O(L), \Delta H = -571.6 \text{ KJmol}^{-1}$

What is the enthalpy of formation of a water molecule.

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44. The enthalpy of combustion of one mole of benzene, carbon and hydrogen are $-3267 \text{ kJ mol}^{-1}$, $-393.5 \text{ kJ mol}^{-1}$ and $-285.8 \text{ kJ mol}^{-1}$ respectively. Calculate the standard enthalpy of formation of benzene.

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45. What is the change in entropy when ice melts to given water.



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46. Derive the ionic product of water and give its value at $25^{\circ}C$.



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47. What is buffer solution? Give one example of acidic buffer solution.



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48. If K_a of weak acid is found to be 1.78×10^{-5} What is the PK_a value?

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49. What happens to the PH of water when NH_4Cl solid is dissolved in it and why?

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50. Give the K_p expression of the equation
 $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$.

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51. Write the principle involved in the estimation of carbon and hydrogen. Give diagram and calculation.

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52. Write the resonance structure of benzene.

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53. How sulphur is estimated by Carius method and give calculation.

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54. Explain position isomerism with example.

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55. Explain the mechanism of nitration of benzene .

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56. Explain Wurtz reaction with example.

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