



CHEMISTRY

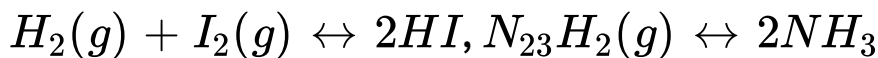
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COMPOUNDS OF NON -METALS

Question Bank

1. In which of the following rever-sible reactions does change in pressure not influence equili-

brium? What is the reason?

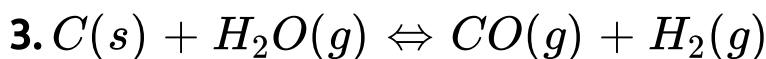


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2. What is the use of applying high pressure during the formation of ammonia from nitrogen and hydrogen?



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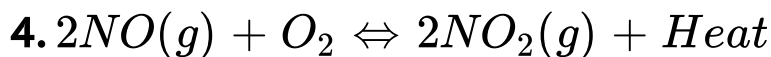


a) Identify the reactants and products.

b) Products are frequently removed from the system. What happens to the system? Explain the reason.



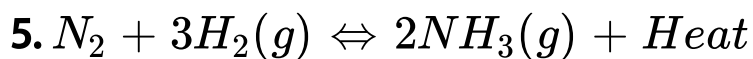
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in this reaction how do the following changes influence the amount of the product? a) Decrease in temperature b) Increase in pressure c) Increase in concentration of oxygen



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a) What change is to be made in pressure to get maximum yield of the products.

b) What is the change in concentration required for increasing the rate of the forward reaction?



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6. The chemical equation of one of the different stages of manufacturing sulphuric acid by contact process is given below. Find out the influence of the following factors in the reaction

given below.



i) Increase the amount of oxygen

ii) Pressure is increased

iii) Catalysed vanadium pentoxide (V_2O_5) is added

iv) SO_3 is removed



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7. Calcium oxide (CaO) is used as drying agent in the preparation of Ammonia in laboratory. Can concentrated H_2SO_4 be used as drying agent instead of CaO? Justify your answer.

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8. Which property of sulphuric acid is shown in the following situation.

a) During the preparation of chlorine the gas is passed through concentrated H_2SO_4

b) Wooden cupboards appeared to be burnt, when concentrated sulphuric acid happened to fall on it.

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9. The graph for the reaction

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ is given below.

a) Identify and write reactions C and D.

b) What happens to the position of point A in the graph when a catalyst is used? Redraw the graph.



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10. It is often said that the production of sulphuric acid is a bench mark of the industrial

development of country. Prepare a note based on the various uses of sulphuric acid.



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11. Fill half of a beaker of capacity 50 mL with sugar. Add concentrated sulphuric acid so that the sugar is immersed in it. Observe the changes. What are the products formed? Which property of sulphuric acid is revealed here?



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12. What is the optimum temperature used for the industrial production of ammonia?



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13. Which substance is used to make ammonia dry?



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14. write the chemical formula of oleum?



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15. Find out the relation and fill in the blanks.

Ammonia : Haber Process Sulphuric acid:.....



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16. The gas formed by the decay of organic substance is.....



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17. The catalyst used in the industrial production of sulphuric acid is.....



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18. Which is the chemical that used as refrigerant in ice plant? (Ammonia, Nitric acid, Sulphuric acid)



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19. Fountain experiment shows.....property of ammonia. (Acidic, Basic, Drying agent, Refrigerant)



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20. The ratio of nitrogen and hydrogen in ammonia is....



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21.Solution is used to test the presence of sulphate



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22. A,B,C and D are four gases. 2 mole A react with 3 mole B to form 2 mole C and mole D. in this reversible reaction, forward reaction is exothermic. Write the chemical equation for the reaction and answer the following questions.

a) If the system is at equilibrium, what will be the effect of increase in pressure on the system?

b) What is the effect of change in temperature?



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23. The equation of the manufacturing process of ammonia is given below.

$N_2 + 3H_2 \rightleftharpoons 2NH_3(g)$ in presence of catalyst and high pressure/ 45 c

a) Name the process

b) Write any one use of ammonia.



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24. Which property of H_2SO_4 is revealed in the following reactions?



ii) $C_{12}H_{22}O_{11} \rightarrow 12C + 11H_2O$ (in presence of con. H_2SO_4)



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25. Complete the quation given below.



b) What is the oxidant in this quation?



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26. When an ammonia tanker leaks, which among the following will you choose as a

i) Spray water

ii) Spray HCl



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27. What will happen if crystals of copper sulphate are kept in con. H_2SO_4 ? Why?



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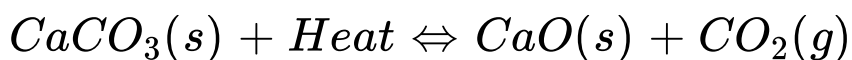
28. a) What is the optimum temperature used for the production of sulphuric acid?

b) Which is catalyst used here?



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29. The equation for the decomposition of calcium carbonate is given.



- a) Say whether high temperature or low temperature is preferable to enhance the rate of forward reaction?
- b) Give reason



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30. a) Write an identification test for ammonium salts.

b) Write the name of liquified form of ammonia.



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31. A system at equilibrium is given below.



write any two conditions which favour the formation of NO_2 gas.



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32. Two salts are formed, when H_2SO_4 reacts with sodium hydroxide.

a) Which are the two salts formed?

b) Write the equations.




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33. Analyse the figure and answer the questions.

a) Through which substance ammonia gas is passed to make it dry?

b) Why is ammonia gas collected in an inverted gas jar?

c) Write the chemical equation for the industrial preparation of ammonia? 



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34. The equation of a reversible reaction is given.

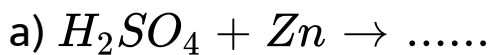
$N_2(g) + O_2 \rightleftharpoons 2NO(g) + \text{HEAT}$. How does the following factors affect the rate of forward reaction?

- a) Decrease in temperature
- b) Increase in pressure
- c) removal of NO



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35. Complete the equations given below.



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36. Two bits of cottons wool dipped separately in con.HCl and ammonia solution are placed at the ends of a glass tube as shown in the figure.



a) What is the reason for forming thick white fumes-inside the glass tube? b) What happens to the white powder on beating? c) Write the equation for the above reversible reaction.



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37. a) What is the role of catalyst in a reversible reaction?

b) is it beneficial to add a catalyst in a system which has already attained equilibrium? Explain the answer.

c) Which is the catalyst used in 'Haber process'?



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38. Sulphuric acid is an important chemical in chemical industry.

a) write any two uses of H_2SO_4

b) Write an example for the dehydrating property of H_2SO_4



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39. A pungent smell was felt when calcium hydroxide and ammonium chloride were mixed in

a watch glass.

a) Write the equation for the above equation

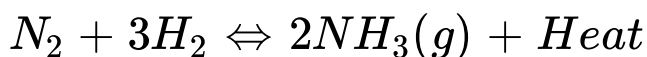
b) Which is the gas formed?

c) Write any one physical property of the gas formed.



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40. Though the forward reaction is exothermic, a comparatively high temperature is used in the preparation of ammonia? Give reason.



b) What is called threshold energy?

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41. Choose the chemicals used to prepare ammonia.

KNO_3 , $BaCl_2$, NH_4Cl , $NaCl$, $Ca(OH)_2$, H_2SO_4

b) Complete the equation $NH_3 + H_2O \rightarrow \dots\dots$

c) Liquor ammonia : concentrated aqueous solution of ammonia: Liquid ammonia.....

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42. The flow chart of the manufacture of sulphuric acid is given.



a) What is 'A' and 'B'? b) Sulphuric acid is formed also by the direct dissolution of sulphur trioxide in water, still SO_3 is not directly dissolved in water. Why? c) What is the name of process of the manufacturing of H_2SO_4



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43. Write an identification test for sulphur salts.



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44. Take some sugar in a dry test tube and add a few drops of concentrated sulphuric acid to it.

a) Write the chemical formula of sugar

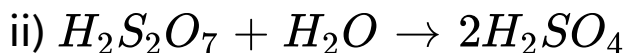
b) what is the product obtained after the reaction?

c) What are the constituents of sugar?



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45. Arrange the following reactions in correct order.



presence of V_2O_5 / 450 C



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46. a) Write the equation of the preparation of ammonia.

b) What is the product obtained when ammonia

dissolves in water?

c) i) Liquor ammonia

ii) Liquid ammonia



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47. Explain the following with suitable examples

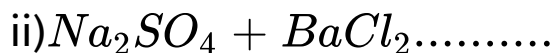
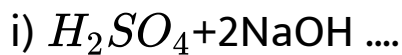
a) Reversible reaction

b) Irreversible reaction

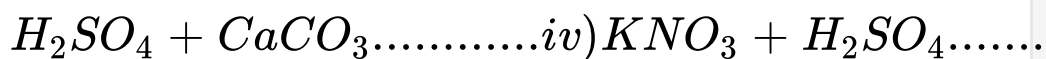


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48. Write the products and complete the reactions



iii)



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49. Which of the following does not effect a chemical reaction in equilibrium? (Temperature, Pressure, Colour of reactants, Concentration)



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50. Which acid is known as 'King of chemicals'?



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51. Example of basic drying agent is.....



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52. It is not advisable to pour water into sulphuric acid, while diluting sulphuric acid. Give reaction.



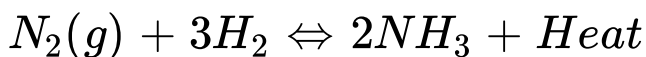
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53. $H_2(g) + I_2 \rightleftharpoons 2HI(g)$ Which of the following has no effect on the given system at equilibrium. (Temperature, Pressure, Concentration).



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54. A system at equilibrium is given below.



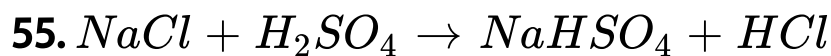
a) When does a reversible process attain equilibrium?

b) What change occurs in the concentration of

reactants and products in a system at equilibrium?



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a) In the above reaction, NaCl reacts with H_2SO_4 and form, hydrochloric acid. Similarly, which salt react with H_2SO_4 to form nitric acid?

b) Write the chemical equation.



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56. The gases Cl_2 , SO_2 and HCl are passed through H_2SO_4 during their preparation.

a) Which property of H_2SO_4 is revealed here?

b) H_2SO_4 is not as a drying agent in the manufacture of ammonia. Why?



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Which of the following does not influence the above system at equilibrium? Give reason.

i) Increase the concentration of reactant

ii) Add more hydrogen

iii) Increase the temperature iv) Increase the pressure

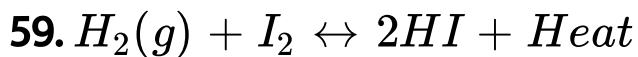


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58. $2SO_2 + O_2 \leftrightarrow 2SO_3 + Heat$ what is the influence of concentration, pressure and temperature on the system at equilibrium: Explain it according to Le-Chatelier's principle.



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answer the following questions related to the given system at equilibrium.

a) The rate of which reactions increases when the concentration of I_2 is increased?

b) What is the influence of pressure on this system?

c) HI must be kept at low temperature to prevent its decomposition. Give reason.



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60. Some of the uses of chemicals are given below. List and classify them as applicable to ammonia and sulphuric acid.

* As a drying agent

* Manufacture of urea

* Refining of petroleum

* As a refrigerant in iceplants

* To clean tiles and window panes

* Manufacture of explosives.



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61. A,B and C are three gases (Symbols are not real) Suppose 1 mole A react with 1 mole B to form 2 mole C. This is a reversible reaction.

a) Write the chemical equation for the above reaction.

b) What is the effect of pressure on this system?

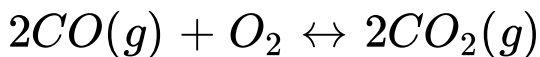
c) What will happen when more amount of 'A' is added to the system at equilibrium?

d) What will happen if the amount of 'C' is increased?



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62. Analyse the system at equilibrium given below.



a) What are the reactants here?

b) what will happen to the system when the amount of oxygen is increased?

c) How does the increase in pressure affect the forward reaction?



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