

NITRIC ACID
Assignment Sheet

1. Name (formula is not acceptable) the gas produced in each of the following reactions :
 - (a) Action of concentrated nitric acid on copper.
 - (b) Heating of ammonium nitrate. (name only the nitrogen containing compound) **[2001]**

2. (a) (i) What compounds are required for the laboratory preparation of nitric acid?
(ii) Why does pure nitric acid take on a yellowish brown colour when exposed to light?
(b) Write equations for the following reactions :
 - (i) Copper and concentrated nitric acid.
 - (ii) Copper oxide and dilute nitric acid. **[2002]**

3. Which concentrated acid will oxidize sulphur directly to sulphuric acid? Write the equation for the same. **[2003]**

4. (a) When nitric acid is prepared by the action of concentrated sulphuric acid on potassium nitrate, what is the special feature of the apparatus used?
(b) Write the equation for the laboratory preparation of nitric acid from potassium nitrate and concentrated sulphuric acid.
(c) Potassium nitrate is prepared from potassium hydroxide and nitric acid. Name the type of this reaction.
(d) Which gas is produced when potassium nitrate is heated? Write the equation for the reaction. **[2003]**

5. X, Y and Z are three crystalline solids which are soluble in water and have a common anion. To help you to identify X, Y and Z, you are provided with the following experimental observation. Copy and complete the corresponding inference. A reddish-brown gas is obtained when X, Y and Z are separately warmed with concentrated sulphuric acid and copper turnings added to the mixture. The common anion is the _____ ion. **[2004]**

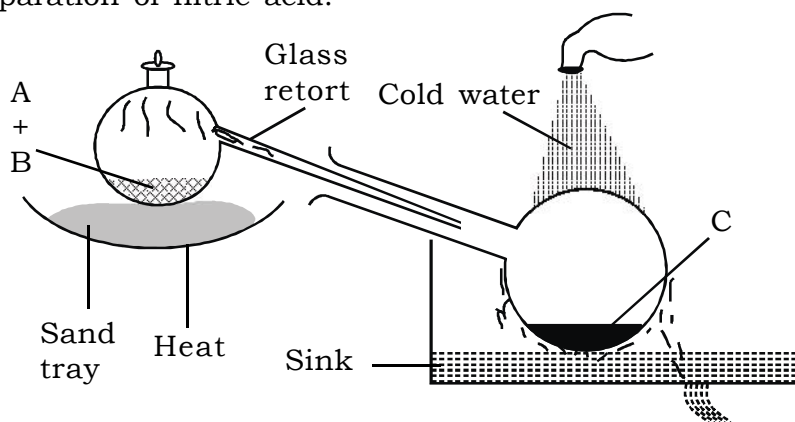
6. Write a balanced equation for the reaction of conc.HNO₃ when added to copper turnings kept in a beaker. **[2004]**

7. (a) Dilute nitric acid is generally considered a typical acid except for its reaction with metals. In what way is dilute nitric acid different from other acids when it reacts with metals?
(b) Write the equation for the reaction of dilute nitric acid with copper.
(d) Account for the yellow colour that appears in concentrated nitric acid when it is left standing in an ordinary glass bottle. **[2005]**

8. (a) Explain why only all-glass apparatus should be used for the preparation of nitric acid by heating concentrated sulphuric acid and potassium nitrate.

- (b) Write a chemical equation to illustrate the acidic nature of nitric acid.
 (c) Name the products formed when ammonium nitrate is heated. **[2006]**

9. The figure given below illustrates the apparatus used in the laboratory preparation of nitric acid.



- (a) Name A (a liquid), B (a solid) and C (a liquid). (Do not give the formulas)
 (b) Write an equation to show how nitric acid undergoes decomposition.
 (c) Write the equation for the reaction in which copper is oxidized by concentrated nitric acid. **[2007]**
10. Identify the following substances :- a dilute acid 'B' which does not normally give hydrogen when reacted with metals but does give a gas when it reacts with copper. **[2008]**
11. Copy and complete the following table relating to an important industrial process. Output refers to the product of the process not the intermediate steps. **[2008]**

Name of process	Inputs	Catalyst	Equation for catalyzed reaction	Output
	Ammonia + air			Nitric acid

12. What is the property of nitric acid which allows it to react with copper. **[2008]**
13. Write the equation for the following reaction:- Dilute nitric acid and copper. **[2008]**
14. Name the gas evolved (formula is not acceptable).
 (a) The gas produced by the action of dilute nitric acid on copper.
 (b) The gas produced on heating sodium nitrate. **[2009]**
15. Select the correct answer from A, B, C, D & E - A: Nitroso Iron [II] sulphate
 B: Iron [III] chloride C: Chromium sulphate D: Lead [II] chloride
 E: Sodium chloride -The compound responsible for the brown ring in the brown ring test for identifying the nitrate ion. **[2010]**

16. A blue crystalline solid 'X' on heating gave a reddish brown gas 'Y', a gas which relights a glowing splint and a residue which is black. Identify X and Y, and write the equation for the action of heat on X. [2010]
17. (i) What is the special feature of the apparatus that is used in the laboratory preparation of nitric acid ?
(ii) Why should the temperature of the reaction mixture of nitric acid not be allowed to rise above 200° C ? [2011]
18. Name - The gas produced when copper reacts with concentrated nitric acid. [2012]
19. State one observation for the following:
Zinc nitrate crystals are strongly heated. [2012]
20. Rewrite the correct statement with the missing word/s:
Magnesium reacts with nitric acid to liberate hydrogen gas. [2012]
21. Give reasons for the following: Iron is rendered passive with fuming nitric acid. [2012]
22. Give a balanced equation for the reaction:
Dilute nitric acid & copper carbonate. [2012]
23. Identify the gas evolved in the following reactions when : [2013]
(i) Sulphur is treated with concentrated nitric acid.
(ii) A few crystals of KNO_3 are heated in a hard glass test tube.
24. Give balanced equation [2013]
Oxidation of carbon with concentrated nitric acid.
25. Fill in the blank from the choices given within bracket :
Cold, dilute nitric acid reacts with copper to form
(Hydrogen, nitrogen dioxide, nitric oxide). [2014]
26. Write balanced equations for the following :
(i) Action of heat on a mixture of copper and concentrated nitric acid. [2014]
27. Give balanced equations for the following : [2014]
(i) Laboratory preparation of nitric acid.
28. Explain the following:
(i) Dilute nitric acid is generally considered a typical acid but not so in its reaction with metals.
(ii) Concentrated nitric acid appears yellow when it is left standing in a glass bottle.
(iii) An all glass apparatus is used in the laboratory preparation of nitric acid. [2015]
29. Write balanced chemical equations for each of the following:
Action of hot and concentrated Nitric acid on copper. [2016]

30. Fill in the blanks using the appropriate words given below:
(Sulphur dioxide, Nitrogen dioxide, Nitric oxide, Sulphuric acid)
- (i) Cold, dilute nitric acid reacts with copper to give_____.
- (ii) Hot, concentrated nitric acid reacts with sulphur to form_____.
- [2016]**
31. Write a balanced chemical equations for each of the following:
- (i) Action of cold and dilute Nitric acid on Copper.
- (ii) Action of conc.nitric acid on Sulphur.
- (iii) Laboratory preparation of Nitric acid.
- [2017]**

