



**Vinayak College of Health Science**  
**Battisputali, Kathmandu**  
**Second internal Examination-2081**

**Subject: Chemistry**

**F.M. - 80**

**Class: HA/CMLT/DPH/Physiotherapy 1<sup>ST</sup> Year**

**P.M. - 32**

**Name: \_\_\_\_\_ Roll NO. \_\_\_\_\_**

**Time: 3hrs.**

**Candidates are required to give the answers in their own words as far as practicable. The figures in the margin indicate full marks.**

**Group 'A'**

**Tick (✓) the correct options of each questions in your answer sheet. [1×1\*20=20]**

- How many atoms are in one mole of CH<sub>3</sub>OH?  
a) 6,      b) 6.0×10<sup>23</sup>,      c) 12.0×10<sup>23</sup>,      d) 3.6×10<sup>24</sup>
- Which of these is a pairs of isobar?  
a) <sup>12</sup>C, <sup>16</sup>O,      b) <sup>13</sup>C, <sup>16</sup>O,      c) <sup>40</sup>Ca, <sup>40</sup>Ar,      d) <sup>40</sup>Ca, <sup>39</sup>Ar
- The atomic number of an atom is equal to the:  
a) total number of protons present in the nucleus of an atom  
b) sum of the number of electrons and that of neutrons  
c) half of the number of electrons present in the nucleus of an atom  
d) sum of the number of protons and that of neutrons
- Which one of them is the weakest?  
a) Ionic bond  
b) Covalent bond  
c) Metallic Bond  
d) van der Waals force
- Which of the following statement is true regarding gases?  
a) gases are highly incompressible  
b) gases exert equal pressure on each and every direction  
c) its volume and shape is fixed  
d) gases have the highest density among the 3 States of matter

- How many moles of oxygen are present in 64 grams of oxygen?  
a) Three moles  
b) Two moles  
c) One mole  
d) 16 moles
- In a liquid, the force required to maintain the flow of layers is 5N, velocity gradient in dv/dx, area of contact is 20m<sup>2</sup>. Then what is the value of coefficient of viscosity?  
a) 6.25 dx/dv,      b) 0.15 dx/dv,      c) 0.2 dx/dv,      d) 0.25 dx/dv
- At constant temperature the product of pressure and volume of a given amount of a gas is constant this is \_\_\_\_\_.  
a) Gay-Lussac law  
b) Charles' law  
c) Boyle's law  
d) None of these
- Oxidation is the same as \_\_\_\_\_.  
a) addition of hydrogen  
b) removal of oxygen  
c) addition of oxygen  
d) removal of Nitrogen
- Alkalis are:  
a) acids, which are soluble in water  
b) acids, which are insoluble in water  
c) bases, which are insoluble in water  
d) bases, which are soluble in water

11. ZnO is a \_\_\_\_\_
- Acidic oxide
  - Basic oxide
  - Neutral oxide
  - Amphoteric oxide
12. Which of the following halogen exists as a solid at room temperature?
- Chlorine
  - Fluorine
  - Iodine
  - Bromine
13. Which metallurgical process is indicated by the following reaction?
- $$\text{ZnCO}_3 \xrightarrow{\Delta} \text{ZnO} + \text{CO}_2\uparrow$$
- Calcination
  - Roasting
  - Leaching
  - Smelting
14. Which among the following statements is **not** correct with respect to allotropes of Carbon?
- Graphite is a good conductor of electricity.
  - Diamond is the hardest substance known.
  - Fullerene is one of the allotropes of carbon.
  - Next to diamond, graphite is the second hardest known substance.
15. Ammonia is used for which of the mentioned processes?
- Manufacture of nitrogen fertilizers
  - Manufacture of nitric acid
  - Manufacture of nitrogen chemical compounds
  - All of the mentioned
16. Which of the following is not a use of hydrogen peroxide?
- Teardrops
  - Bleaching agent
  - Disinfectant
  - Antiseptic
17. Which of the following substances produces hydroxide ions when dissolved in water?
- Ammonia
  - Nitrogen dioxide
  - Carbon dioxide
  - Sulphur dioxide
18. \_\_\_\_\_ is the only non-metal placed with alkali metals.
- Francium
  - Hydrogen
  - Rubidium
  - Caesium
19. What role does oxygen play in photosynthesis?
- Oxygen colors plant leaves green.
  - Oxygen removes carbon dioxide from green plants.
  - Oxygen only participates in combustion, not photosynthesis.
  - Oxygen is a waste product of photosynthesis.
20. Do ice float on Water?
- may be
  - yes
  - cannot say
  - no

### Group 'B'

Attempt Any TEN Questions.

[2×10 = 20]

21. Define Phosphorescence.
22. Write down the biological importance of Sodium and Calcium.
23. Write down molecular formula of following:  
a) Plaster of Paris, b) Blue vitriol, c) Washing soda, d) Epsom salt.
24. Oxygen is presented in 1 liter flask at a pressure of  $7.6 \times 10^{-10}$  mm of Hg at  $0^\circ\text{C}$ . Calculate the number of oxygen molecules in the flask.
25. Give reason, why alcohol can flow more easily than honey?
26. Differentiate between crystalline and amorphous solids.
27. Write the name of elements and their electronic configuration having atomic number 11, 17, 24 and 29.
28. Find the oxidation number of underlined atoms:  
a)  $\text{Na}_2\underline{\text{S}}_2\text{O}_3$ , (b)  $\text{K}_2\underline{\text{Cr}}\text{O}_4$ .
29. What do you mean by conjugate pair of acid and base? Explain with example.
30. What mass of oxygen is required to completely with 1.5 moles of methane?
31. Define acidimetry and alkalimetry. How many gm of  $\text{Na}_2\text{CO}_3$  is required to prepare 250ml of  $\frac{N}{10}$  solution?
32. Carbonmonoxide gas is toxic, why?
33. What happens when ammonia gas is passed into  $\text{FeCl}_3$  and  $\text{CuSO}_4$  solution respectively.

### Group 'C'

Attempt Any FOUR Questions.

[5×4 = 20]

34. Define hard and soft water with examples. What do you mean by permanent hardness of water? Explain in brief about permutit process of removal of hardness. (1+1+1+2)

35. Describe different block's of Modern periodic table.
36. Explain the reducing properties of  $\text{H}_2\text{S}$  in detail.
37. Compare the bleaching property of  $\text{SO}_2$  and  $\text{Cl}_2$ .
38. Describe the postulates of Bohr's atomic model.
39. 17gm of ammonia is completely reacted with 45 grams of oxygen to produce NO and  $\text{H}_2\text{O}$ .
  - a) Which one is limiting reactant and why?
  - b) Calculate the number of moles of unreacted left over.
  - c) What volume of NO are produced at STP.
  - d) Calculate the mass of water produced.

### Group 'D'

Attempt Any TWO Questions.

[10 × 2 = 20]

40. Describe the different seven types of reaction with examples.
41. State Charle's law. Derive the relation  $PV = nRT$ , where the symbol have their usual meanings.  
About 200  $\text{cm}^3$  of a gas is confined in a vessel at  $20^\circ\text{C}$  and 740 mm Hg pressure. How much volume will it occupy at S.T.P.? (2+5+3)
42. Define strong and weak electrolytes with examples. State and explain Faraday's law of electrolysis.  
A current of 2.5 Ampere is passed through the solution of  $\text{ZnSO}_4$  for 30minutes and deposits 1.52gm metal at cathode. Calculate the equivalent weight of Zn. (1+1+6+2)
43. Write short notes on any TWO: (2×5 = 10)
  - a) Le-Chatlier's Principle
  - b) Hess's law.
  - c) Nascent Hydrogen
  - d) Allotropes of carbon

--Examinations Never End--

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