Chapter 6: Concept of Mole and Chemical

Answer the questions no. 1 and 2 from the following stem : [All Board-18]

20mL 0.1M HCl	10mL 0.15M NaOH

1. How many NaOH molecules dissolved in the above solution? [All Board-18]
   - ⓐ 8.03×10^{20}
   - ⓑ 9.03×10^{20}
   - ⓒ 8.03×10^{23}
   - ⓓ 9.03×10^{23} **ⓑ**

2. If the solution of both pot is mixed —— [All Board-18]
   i. H^+ and OH^- will be the spectator ion in the solution
   ii. Produced solution will be basic properties
   iii. 0.088g salt will be produced in the solution
   Which one is correct?
   - ⓐ i
   - ⓑ iii
   - ⓒ i and iii
   - ⓓ ii and iii   **ⓑ**

3. How many molecules of water are there in blue vitriol? [D.B.-17]
   - ⓐ 1
   - ⓑ 3
   - ⓒ 5
   - ⓓ 7   **ⓒ**

4. What is the concentration of 10.6gm, 100mL soda ash solution? [D.B.-17]
   - ⓐ 0.10M
   - ⓑ 0.37M
   - ⓒ 1.00M
   - ⓓ 2.65M   **ⓒ**

5. What is the volume of 1 mole gas at standard temperature and pressure? [C.B.-17]
   - ⓐ 2.24 L
   - ⓑ 22.4 L
   - ⓒ 6.02×10^{23}L
   - ⓓ 2240 L   **ⓑ**

6. What is the relative molecular mass of glucose? [C.B.-17]
   - ⓐ 90
   - ⓑ 140
   - ⓒ 160
   - ⓓ 180   **ⓓ**

7. How much gm of MgO is obtained after combustion of 24gm Mg in sufficient amount of air? [C.B.-17]
   - ⓐ 40 gm
   - ⓑ 60 gm
   - ⓒ 80 gm
   - ⓓ 100 gm   **ⓐ**

8. How many atoms of hydrogen take part in that reaction? [Ctg.B.-17]
   - ⓐ 6.02×10^{23}
   - ⓑ 12.04×10^{23}
   - ⓒ 15.05×10^{23}
   - ⓓ 30.10×10^{23} **ⓓ**

9. What is the colour of dehydrated Copper sulphate? [S.B.-17]
   - ⓐ Green
   - ⓑ White
   - ⓒ Red
   - ⓓ Blue   **ⓑ**

10. What do you mean by semi molar? [S.B.-17]
    - ⓐ 2 molar
    - ⓑ 0.5 molar
    - ⓒ 0.1 molar
    - ⓓ 0.01 molar   **ⓑ**

11. What will be concentration of the solution when 24.5g H_2SO_4 dissolves into 500 ml solution? [J.B.-17]
    - ⓐ 0.5 M
    - ⓑ 0.05M
    - ⓒ 0.25M
    - ⓓ 0.1M   **ⓐ**

12. What amount of CO_2 will be found when 4.2×10^2 mole methane is burnt completely? [J.B.-17]
    - ⓐ 1.85×10^2g
    - ⓑ 1.85×10^4g
    - ⓒ 1.85×10^5g
    - ⓓ 1.85×10^3g   **ⓑ**

13. What is the formula of Blue vitriol? [J.B.-17]
    - ⓐ $CuSO_4 . 7H_2O$
    - ⓑ $FeSO_4 . 7H_2O$
    - ⓒ $ZnSO_4 . 5H_2O$
    - ⓓ $CuSO_4 . 5H_2O$ **ⓓ**

14. How much molar volume of 16g Oxygen at STP? [D.B.-16]
    - ⓐ 5.6 L
    - ⓑ 11.2 L
    - ⓒ 22.4 L
    - ⓓ 33.6 L   **ⓑ**

15. Precent composition of crystal water in blue-vitriol — [D.B.-16]
    - ⓐ 27.07%
    - ⓑ 36.07%
    - ⓒ 47.07%
    - ⓓ 63.07%   **ⓑ**

16. Which compound's empirical and molecular formula are same? [R.B.-16]
    - ⓐ Hydrogen peroxide
    - ⓑ Ethyene
    - ⓒ Ammonia
    - ⓓ Benzene   **ⓒ**

17. What is the color of copper sulphate? [R.B.-16]
    - ⓐ Green
    - ⓑ Red
    - ⓒ Yeallow
    - ⓓ Blue   **ⓓ**

18. In which compound the amount of carbon is 27.27%? [Dj.B.-16]
    - ⓐ CH_4
    - ⓑ C_2H_6
    - ⓒ CO_2
    - ⓓ CO   **ⓒ**

19. The solute necessary to prepare 2 liter 0.1 molar $CuSO_4.5H_2O$ is — [C.B.-16]
    - ⓐ 49.9 g
    - ⓑ 99.89 g
    - ⓒ 249.5 g
    - ⓓ 499 g   **ⓐ**

20. $CO_2(g) + H_2O(l) \longrightarrow A$
    What is the mass of 0.5 mole of A? [C.B.-16]
    - ⓐ 62.03 g
    - ⓑ 56.02 g
    - ⓒ 31.00 g
    - ⓓ 28.01 g   **ⓒ**

21. How much g of MgO is produced from 56 g of Mg? [C.B.-16]
    - ⓐ 11.67 g
    - ⓑ 23.33 g
    - ⓒ 46.67 g
    - ⓓ 93.33 g   **ⓓ**

22. What is the volume of 1g Nitrogen gas in standard condition? [C.B.-16]
    - ⓐ 0.7 L
    - ⓑ 0.8 L
    - ⓒ 1.6 L
    - ⓓ 3.2 L   **ⓑ**

23. How many molecules are there in 18g Glucose? [Ctg.B-16]
    - ⓐ 6.02×10^{23}
    - ⓑ 6.02×10^{22}
    - ⓒ 3.01×10^{23}
    - ⓓ 3.01×10^{22} **ⓑ**

24. How many molecules are in 44 g carbon dioxide? [S.B.-16]
    - ⓐ 1.2×10^{-22}
    - ⓑ 4.4×10^{-22}
    - ⓒ 6.02×10^{-23}
    - ⓓ 6.02×10^{23} **ⓓ**

25. What is the concentration of the solution when 17.75g sodium sulfate dissolved in 250 mL? [S.B.-16]
    - ⓐ 0.1 M
    - ⓑ 1.25 M
    - ⓒ 1 M
    - ⓓ 0.5 M   **ⓓ**

26. If 0.1 mole amount of solute get dissolved in one liter solution, then what will be the concentration of the solution? [J.B.- 16]
    - ⓐ 0.1M
    - ⓑ 0.01M
    - ⓒ 0.5M
    - ⓓ 0.05M   **ⓐ**

27. The regulation of expressing density is — [J.B.-16]
    - ⓐ liter
    - ⓑ mole
    - ⓒ milligram
    - ⓓ molarity   **ⓓ**

28. 12g magnesium react with how much amount oxygen? [J.B.-16]
    - ⓐ 8g
    - ⓑ 16g
    - ⓒ 32g
    - ⓓ 12g   **ⓐ**

29. What is the colour of dehydrated $CuSO_4$? [J.B.- 16]
    - ⓐ Blue
    - ⓑ Green
    - ⓒ White
    - ⓓ Brown   **ⓒ**

30. How much percentage of N in urea fertilizer? [B.B.-16]
    - ⓐ 36%
    - ⓑ 46%
    - ⓒ 56%
    - ⓓ 66%   **ⓑ**

31. What is the value of Avogadro Number? [B.B.-16]
    - ⓐ 6.2×10^{-23}
    - ⓑ 6.02×10^{-23}
    - ⓒ 6.02×10^{23}
    - ⓓ 6.2×10^{23} **ⓒ**

On the basis of the following stem answer the questions no. 32 and 33 : –[R.B.-17]
200 ml 0.5 M H_2SO_4 solution is prepared.

32. How many molecules are present in the solute of the solution?
    ⓐ 6.02×10^{24} ⓑ 6.02×10^{23}
    ⓒ 6.02×10^{22} ⓓ 6.02×10^{21} **ⓒ**

33. If 10 gm NaOH is added in the stem —
    i. neutralization
    ii. NaOH will remain in the solution
    iii. 0.1 M salt will produce
    Which one is correct?
    ⓐ i and ii   ⓑ i and iii
    ⓒ ii and iii   ⓓ i, ii and iii   **ⓓ**

Read the stem and answer questions no. 34-35 :–
[Ctg.B.-17]
5gm hydrogen and 30 gm nitrogen react with each other. In this reaction change of heat is occurred and one reactant is remain left.

34. In the reaction —
    i. Heat is produce
    ii. Has no effect of pressure at equilibrium state
    iii. Mass of the product is 28.33
    Which one is correct?
    ⓐ i   ⓑ i and ii
    ⓒ i and iii   ⓓ i, ii and iii   **ⓒ**

35. After reaction which one remain left?
    ⓐ 0.1667 mole N_2 ⓑ 0.2382 mole N_2
    ⓒ 1.0714 mole H_2 ⓓ 3.2142 mole H_2 **ⓑ**

Answer to the questions no. 36 and 37 by using the following stem :– [B.B.-17]
The mass of 1 atom of $_{47}X$ is 1.791×10^{-22}g
(Here X is not a regular element)

36. In the periodic table which group is perfect for the mentioned element?
    ⓐ 1   ⓑ 2
    ⓒ 11   ⓓ 12   **ⓒ**

37. What is the relative atomic mass of the element?
    ⓐ 9.27×10^{-3}g   ⓑ 1.66×10^{-2}g
    ⓒ 10.6g   ⓓ 107.89g   **ⓓ**

Answer to the questions no. 38 and 39 by using the following stem :– [B.B.-17]

20g Al_2O_3	20g HCl

38. For balancing the reaction, occur by the above two compound, how many mole of HCl is needed?
    ⓐ 2   ⓑ 3
    ⓒ 5   ⓓ 6   **ⓓ**

39. In the reaction of the above two compound —
    i. HCl is a Limiting reactant
    ii. 10.685g Al_2O_3 will be excess
    iii. 133.5g $AlCl_3$ will be produce
    Which one of the following is correct?
    ⓐ i and ii   ⓑ ii and iii
    ⓒ i and iii   ⓓ i, ii and iii   **ⓐ**

Based on the following stem answer the questions No. 40 and 41. [D.B.-16]
750 mL 0.125 M K_2CO_3 solution is prepared.

40. How many molecular of solute are present in that solution?
    ⓐ 5.5×10^{-24} ⓑ 5.68×10^{-22}
    ⓒ 5.64×10^{22} ⓓ 6.64×10^{23} **ⓒ**
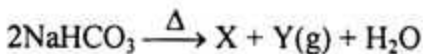
41. If HCl is passed through this solution —
    i. KCl and CO_2 will be produced
    ii. Precipitate will be obtained
    iii. 2.1L CO_2 will be produced
    Which one of the following is correct?
    ⓐ i and ii   ⓑ i and iii
    ⓒ ii and iii   ⓓ i, ii and iii   **ⓑ**

Answer questions no. 42 & 43 on the basis of the following reaction : [C.B.-16]

$$2NaHCO_3 \xrightarrow{\Delta} X + Y(g) + H_2O$$

42. How much amount of 'X' compound will be needed to produce 250 mL semi-molar solution?
    ⓐ 2.65 g   ⓑ 5.3 g
    ⓒ 6.5 g   ⓓ 13.25 g   **ⓓ**

43. What is the mass of 5.5 liter of 'Y' compound at standard temperature and pressure?
    ⓐ 10.80 g   ⓑ 5.40 g
    ⓒ 2.80 g   ⓓ 1.96 g   **ⓐ**