MALAPPURAM DISTRICT HIGHER SECONDARY CHEMISTRY TEACHERS ASSOCIATION

OXY CHEMISTRY 3.0

FIRST YEAR CHEMISTRY MODEL EXAMINATION 3.2

Time : 2 Hours | Cool off time : 20 Minutes | Maximum Score: 60

- There is a cool off time of 20 minutes in addition to the writing time.
- Read questions carefully before answering.
- Calculation, figures and graph should be shown in the answer sheet itself.

Answer any 6 questions from 1 - 12. Each carries 2 score (6 x 2 = 12)

1. Washing soda and baking soda are important compounds of sodium.
   (a) Name the method of preparation of Na_2CO_3. (1)
   (b) The formula of baking soda is ..... (1)

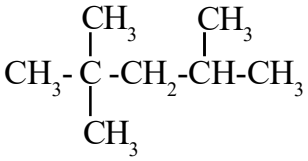
2. The terms *"lime water"* and *"milk of lime"* are related to calcium hydroxide. Differentiate lime water and milk of lime. (2)

3. Carbon exist in many allotropic forms.
   (a) Which is the thermodyanmically most stable allotropes of carbon? (1)
   (b) Which allotrope of carbon is used for making crucible? (1)

4. Explain the reaction of diborane with ammonia? (2)

5. Give the IUPAC names of the following compounds.

   (a) 

   (b)  (2)

6. Write two possible chain isomers of the compound with molecular formula C_5H_{12} (2)

7. H_2O_2 stored in wax-lined glass or plastic vessels in dark. Why? (2)

8. What you mean by coal gasification? (2)

9. Find out the oxidation number of Cr in the following compounds. (2)
   (a) $K_2Cr_2O_7$ (b) Cr_2O_3

10. Explain disproportionation reaction with example. (2)

11. Write the product and name the reaction. (2)

$$2\ CH_3\text{-}CH_2\text{-}Cl\ +\ 2\ Na \xrightarrow{\text{ether}} \ldots\ldots\ldots\ldots\ldots\ +\ 2\ NaCl$$

12. How will you convert ethyne in to benzene? (2)

Answer any 8 questions from 13 - 28. Each carries 3 score (8 x 3 = 24)

13. A compound of sodium which is used in fire extinguishers and is a mild antiseptic for skin infections.
    (a) Write the formula of that compound? (1)
    (b) Give its preparation (2)

14. (a) What is plaster of paris? (1)
    (b) Give its preparation. (2)

15. Diamond, graphite and fullerenes are allotropes of carbon.
    (a) Differentiate diamond and graphite. (2)
    (b) What are the different types of rings present in a buckminster fullerene? (1)

16. Explain the structure of diborane. (3)

17. How can we detect carbon and hydrogen in an organic compound? (3)

18. Write the structural formula of the following.
    (a) 3-Hydroxy pentanal (1)
    (b) 4-Ethyl-1-fluoro-2-nitrobenzene (1)
    (c) Nitro cyclohexane (1)

19. (a) Explain green house effect. (1)
    (b) Explain global warming (1)
    (c) Write examples for green house gases. (1)

20. Acid rain is said to be a threat to Taj Mahal.
    (a) How acid rain formed? (2)
    (b) Give its consequence. (1)

21. Balance the following reaction using half reaction method. (3)
    $Fe^{2+}(aq)\ +\ Cr_2O_7^{2-}(aq)\ \rightarrow\ Fe^{3+}\ (aq)\ +\ Cr^{3+}$ in acidic medium.

22. Write examples for the following redox reactions. (3)
    (a) Combination reactions
    (b) Decompostion reactions
    (c) Displacement reactions

23. What are different types of molecular hydrides? Give one expample for each. (3)

24. (a) What is water gas? (1)
(b) How will you prepare water gas? (2)

25. Write chemical equations for the following conversion (3)
(a) Benzene into nitrobenzene
(b) Benzene into toluene

26. How will you prepare benzene form (a) benzoic acid and (b) phenol (3)

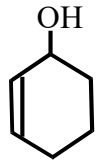
27. Complete the following reaction. (3)

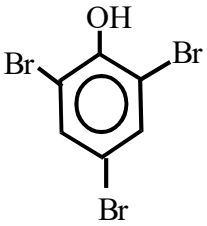
(a) $CaC_2 + 2H_2O \rightarrow$ ..... + $Ca(OH)_2$

(b) $CH_3\text{-}C\equiv H + H_2O \xrightarrow{Hg^{2+}/H^+}$ .....

(c) $CH_3\text{-}CH_2\text{-}Br + H_2 \xrightarrow{Zn,\ H^+}$ ..... + HBr

28. Write the IUPAC name of the following compound. (3)

(a) 

(b) 

(c) $CH_3\text{-}CH_2\text{-}CH{=}CH\text{-}CH_2\text{-}COOH$

Answer any 6 questions from 29 - 40. Each carries 4 score (6 x 4 = 24)

29. (i) Explain the preparation of the following.
(a) CaO (b) $Ca(OH)_2$ (c) $CaCO_3$ (3)
(ii) Solvay process is not suitable for the prepartion of K_2CO_3. Give reason. (1)

30. (a) What is the purpose of adding gypsum in cement? (1)
(b) What you mean by the settting of the cement? Give its reason? (3)

31. (a) What are silicones? (1)
(b) How will you prepare silicone? (2)
(c) Give one use of silicone? (1)

32. (a) CO is highly poisonous. Why? (2)
(b) CO is used in the extraction of many metals. Why? (1)
(c) The mixture of CO and N_2 is known as ..... (1)

33. (a) What is sodium fusion extract? (2)
(b) How can you detect the presence of nitrogen in an organic compound by using the sodium fusion extract? (2)

34. Briefly explain the different types of structural isomers shown by organic compound with suitable examples. (4)

35. (a) Powder of kernel of tamarind seeds has a role in green chemistry. Explain. (2)
(b) Explain the term BOD. (1)
(c) What is the role of green chemistry in bleaching of paper. (1)

36. Classify the following hydrides to ionic, covalent and metallic. (4)
CrH, $VH_{0.56}$ MgH_2, HF, NH_3 ,NaH, PH_3, H_2O

37. Explain reason for the follwing
(a) Water gas is also known as syn gas. (1)
(b) Hard water is harmful for boilers. (1)
(c) Phophorous cannot form penta hydrides. (2)

38. (a) Which is the major product obtained when HBr is added to propene . (1)
(b) Write chemical equation for the above reaction. (1)
(c) Name and state the rule which justify your answer (2)

39. (a) Draw Newman and Sawhorse projection of staggered and eclipsed conformations of ethane. (3)
(b) Which one is more stable staggered or eclipsed? (1)

40. Explain with examples
(a) Isomerisation (2)
(b) Aromatisation (2)