

MODELEVALUATION TEST 2021
CHEMISTRY

TIME : 1.30 Hrs

Max. Score : 40

INSTRUCTIONS

- 20 minutes is given as cool off time.
- Use cool-off time- to read the questions and plan your answers.
- Attempt the questions according to the instructions.
- Keep in mind the score and the time while answering the questions.
- The maximum score for questions from 1 to 32 will be 40.

Questions 1- 8 carries 1 score each.

(1x8=8)

1. Which is the carbonate ore of zinc?
2. Which is the mathematical representation of charle's law?
($PV = a \text{ constant}$, $\frac{V}{T} = a \text{ constant}$, $\frac{V}{n} = a \text{ constant}$)
3. is the substance used to remove moisture content in ammonia gas.
4. The maximum number of electrons that can be accomodated in 'd' subshell is
(14, 6, 2, 10)
5. Which is the anode in Zn - Ag cell?
6. Which is the monomer of natural rubber?
7. is the general formula of Alkenes.
8. is the concentration method used for concentrating Bauxite.

Questions 9-16 carries 2 score each.

(2 x 8 = 16)

9. Which are the raw materials used in the laboratory preparation of Ammonia?
10. Find the GMM of the following

[Hint : Atomic mass of C-12, H-1, O-16, Ca - 40]

- a) $C_6H_{12}O_6$ (1)
- b) $CaCO_3$ (1)

11. Which are the components of stainless steel? (2)

12. Teflon is a polymer.

a) Which is the monomer of teflon? (1)

b) Draw the structure of teflon. (1)

13. Differentiate between galvanic cell and electrolytic cell. (2)



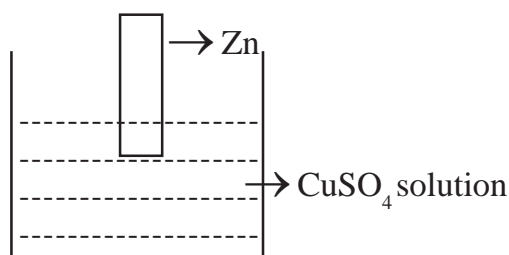
Which factor does not influence the above system at equilibrium? Give reason (2)

15. Molecular mass of water is 18.

a) Find the number of moles in 180g water. (1)

b) Find the number of molecules present in it. (1)

16. Observe the figure and answer the question below.



What happens to Zinc rod? Give reason. (2)

Questions 17 - 24 comes 3 score each (3x8=24)

17. Nature of ore is given below. Write the concentration methods suitable for each.

i) High density ore and low density impurities. (1)

ii) Ore is dissolved in suitable solvent. (1)

iii) High density impurities and low density ore. (1)

18. The following organic compounds represent a pair of isomers.



a) Which is the similarity between them? (1)

b) How do they differ from each other? (1)

c) Name the type of isomerism exhibited by them. (1)

19. Blast furnace is used for the extraction of iron from its ore.

a) Which is the ore used here? (1)

b) Which are the substance fed into the blast furnace? (1)

c) Identify gangue and flux here. (1)

20. The element copper has atomic number 29.

a) Write the subshell electronic configuration of copper. (1)

b) Write any two properties of the block in which this element belongs? (2)

21. $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$

a) Which is the white curdy precipitate formed here? (1)

b) What change observed when adding dilute HCl to this? (1)

c) Which salt is identified here? (1)

22. During the electrolysis of molten NaCl

a) Name the product obtained at anode and cathode. (2)

b) Write the chemical equation of the reaction takes place at cathode. (1)

23. The data of an experiment conducted on a fixed mass of gas at constant pressure are given.

Volume (V) L	Temperature (T) K
400	200
600	(a)
(b)	450

a) Find the value of (a) and (b). (2)

b) Which gas law is illustrated here. (1)

24. Copper is refined through electrolytic reduction. Write answers to the following related with electrolytic reduction of copper.

a) Which is the anode used here? (1)

b) Which is the Cathode? (1)

c) Name the Electrolyte used (1)

Questions 25-32 carries 4 score each. (4x8=32)

25. Write the IUPAC name of the following.



26. The outershell electronic configuration of an element 'X' in 2nd period of periodic table ends as p^3 . (symbol is not real).

a) Write down the complete configuration of the element. (1)

b) Identify the group to which this element belongs. (1)

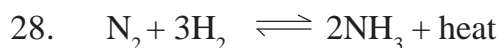
c) Write any two characteristics of the block in which the element belongs. (2)

27. Some electrodes and salt solutions are given.

[Ag rod, Zn rod, Mg rod, MgSO_4 solutions, AgNO_3 solutions]

a) Draw a galvanic cell by using the above given materials. (2)

b) Write the chemical equation at anode and cathode. (2)



a) What change occurs to forward reaction when temperature increases? Give reason. (2)

b) What is optimum temperature used here? (1)

c) Which is the catalyst used in this reaction? (1)

29. Complete the following.

i) $\text{CH}=\text{CH} + \text{H}_2 \rightarrow$ (a) (1)

ii) (b) + $\text{Cl}_2 \rightarrow \text{CH}_2\text{Cl}_2 + \text{HCl}$ (1)

iii) $n(\text{CH}_2=\text{CH}_2) \rightarrow$ (c) (1)

iv) $\text{CH}_4 +$ (d) $\rightarrow \text{CO}_2 + \text{H}_2\text{O}$ (1)

30. The Subshell electronic configuration of a few elements are given below. (Symbols are not real).

A - $1s^2 2s^2 2p^6 3s^2 3p^5$

B - $1s^2 2s^2 2p^6$

C - $1s^2 2s^2 2p^6 3s^2 3p^6 3d^2 4s^2$

D - $1s^2 2s^2 2p^5$

a) Which element belong to same period? (1)

b) Which is the noble gas? (1)

c) Which is the transition element? (1)

d) Which elements belongs to same group? (1)

31. Write the structural formula of the compound given below.

a) 2,2 - dimethyl hexane. (1)

b) But - 2 - ene (1)

c) 2,3,3 - trimethyl pentane (1)

d) 2,4 - dimethyl hexane. (1)

32. Complete the table.

a) Write values for (a) and (b) (2)

Volume (V) L	Pressure (P) atm
100	1
(a)	2
25	(b)
20	5

a) Which gas law related to it? State the law. (2)

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CHEMISTRY

SET II

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INSTRUCTIONS

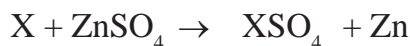
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Questions 1- 8 Carries 1 score each.

(1x8=8)

1. What is the oxidation state of Mn in MnO_2 ? [Hint : Oxidation state of oxygen is - 2]
2. The substance used to remove impurities present in ore is known as
3. 5 - 8 % ethanoic acid is known as
4. Which property of Sulphuric acid is used in the preparation of SO_2 ?
5. Which is the Subshell common to all shells?
(s, p, d, f)
6. Find the number of gram molecular mass present in 64g Oxygen.
[Hint : Molecular mass of oxygen is 32]
7. The method used to separate iron tungstate from tinstone is
8. Identify the possible metal 'X' of the displacement reaction given below.

[Fe, Mg, Cu, Zn]



Questions 9-16 carries 2 scores each.

(2x8=16)

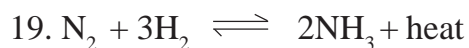
9. Distinguish Liquor ammonia and liquid ammonia. (2)
10. The gas in a cylinder A of volume 3L is completely transferred into cylinder B of volume 6L without changing the temperature.
a) What is the new volume of the gas? (1)

- b) In which cylinder the gas experiences more pressure? (1)
11. Write any two practical applications of electrolysis. (2)
12. The subshell electronic configuration of ${}_{24}\text{Cr}$ is given in two different ways.
- i) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4 4s^2$
- ii) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$
- Which among these is the correct configuration. Give reason. (2)
13. Write any two characteristics of chemical equilibrium. (2)
14. The size of the air bubbles rising from the bottom of an aquarium increases. Give reason. (2)
15. Metals are refined from ores.
- a) Name the sulphide ore of zinc. (1)
- b) Which is the method used to concentrate sulphide ores? (1)
16. Construct Mg-Fe galvanic cell. (2)

Questions 17-24 carries 3 scores each. (3x8=24)

17. Molecular mass of Ammonia is 17.
- a) How much is the GMM of ammonia? (1)
- b) Find out the number of moles present in 85g ammonia. (1)
- c) Calculate the number of molecules present in 85g ammonia. (1)
18. Match the following. (3)

Reactants	Products	Name of reaction
a) $\text{CH}\equiv\text{CH} + \text{H}_2$	$\text{CO}_2 + \text{H}_2\text{O}$	Substitution reaction
b) $\text{C}_2\text{H}_6 + \text{O}_2$	$\text{CH}_3\text{-CH}_2\text{Cl} + \text{HCl}$	Addition reaction
c) $\text{CH}_3\text{-CH}_3 + \text{Cl}_2$	$\text{CH}_2 = \text{CH}_2$	Combustion



a) Name the industrial preparation of ammonia. (1)

b) What is the influence of pressure in this reaction. Justify your answer. (2)

20. During the electrolysis of molten sodium chloride -

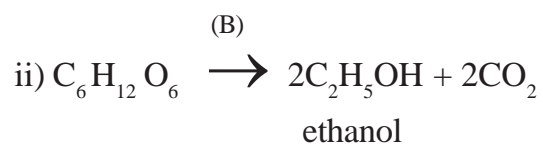
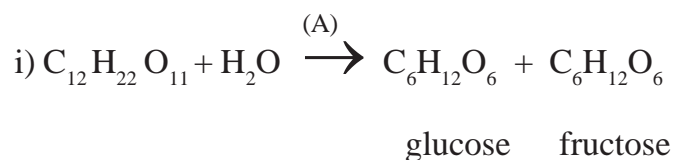
a) Which are the products formed at anode and cathode? (2)

b) Write the chemical equation occurs at cathode. (1)

21. Complete the table. (3)

ore	Concentration method
Magnetite
Bauxite
Zinc blende

22. The following is the chemical equation represent the industrial preparation of ethanol.



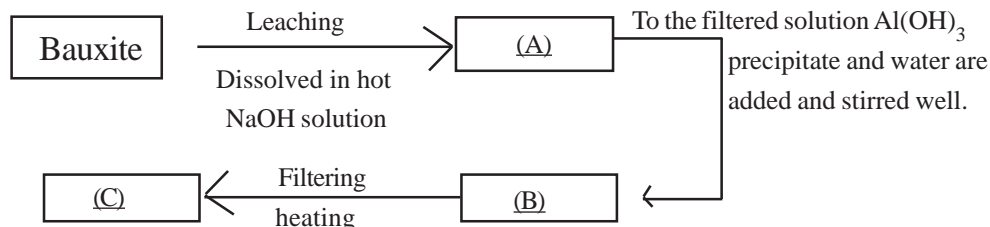
a) Identify the enzymes A and B. (1)

b) What is rectified spirit? (1)

c) What is power alcohol? (1)

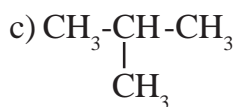
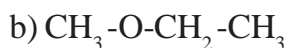
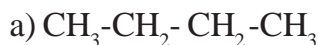
23. Differentiate between calcination and roasting with examples. (3)

24. Complete the flow diagram related with the concentration of Bauxite. (3)



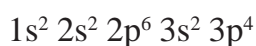
Questions 25-32 carries 4 score each (4x8=32)

25. (i) Find out the isomeric pair from those given below.



(ii) Mention the type of isomerism in each pair. (2)

26. Subshell electronic configuration of an elements is given below.



a) Write the atomic number of this elements. (1)

b) How many shells are present? (1)

c) Which is the outer most Subshell? (1)

d) Find the block and group in which this elements belongs? (1)

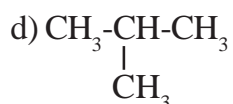
27. Ions are current carriers in electrolytes.

a) Sodium chloride in solid state is not an electrical conductor why? (1)

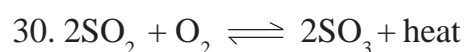
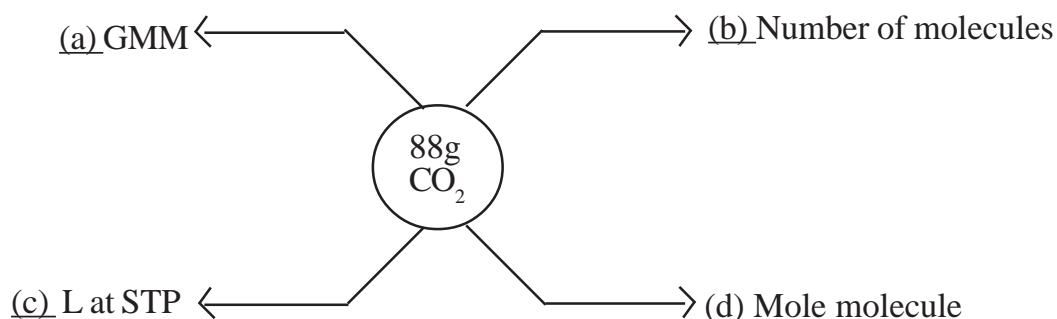
b) If the aqueous solution of sodiumchloride is subjected to electrolysis which are the products obtained at each electrodes? (2)

c) Write the chemical equation at anode during the electrolysis of molten sodium chloride. (1)

28. Write the IUPAC names of those given below.



29. Find (a), (b), (c) and (d) (4)



a) Write any two factors increases the rate of forward reaction. (2)

b) Which is the catalyst used in the industrial production of Sulphuric acid? (1)

c) What is the name of industrial production of sulphuric acid?

31. Atomic number of manganese is 25.

a) Find the oxidation state of Mn in Mn_2O_3 [oxidation state of oxygen is - 2] (1)

b) Write the subshell electronic configuration of Mn ion in Mn_2O_3 (1)

c) Give reason for the variable oxidation states of 'd' block elements. (2)

32. Write the structural formula of the compound given below.

a) 2,3 - dimethyl hexane (1)

b) 2,2 - dimethyl propane (1)

c) 3 - ethyl pentane (1)

d) 3 - methyl heptane (1)

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CHEMISTRY

SET III

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INSTRUCTIONS

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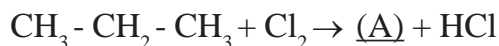
Questions 1- 8 Carries 1 score each.

(1x8=8)

1. Cryolite is the mineral of which metal?
2. In which period lanthanoids included?
3. Which is the monomer of teflon?
4. Which alloy steel is used for the manufacture of permanent magnets?
5. Which is the product obtained at anode when molten sodium chloride is subjected to electrolysis?
6. is the functional group present in alcohol.
7. Which is the catalyst used in the industrial preparation of Sulphuric acid?
8. Which law explains the relation between volume and number of molecules?

Questions 9-16 carries 2 scores each (2x8=16)

9. Complete the following equations. (2)



10. Take some sugar in a watch glass and add concentrated Sulphuric acid into it.

a) What change occurs? (1)

b) Which property of Sulphuric acid is shown here? (1)

11. Calculate the volume of 280g of N_2 at STP. [Hint : N-14] (2)

12. Analyse the given table and answer the following questions. (2)

Metal	Refining Method
Tin	(A)
Mercury	(B)

13. Iron bangle is electroplated with Copper . Identify the anode and cathode. (2)

14. $N_2 + 3H_2 \rightleftharpoons 2NH_3 + \text{heat}$ (2)

Write any two ways to increase the forward reaction.

15. Find the number of GMM in the given samples. [Hint : H-1, C-12]

a) 20g hydrogen (1)

b) 24g Carbon (1)

16. Name the product obtained at anode and cathode during the electrolysis of molten potassium chloride. (2)

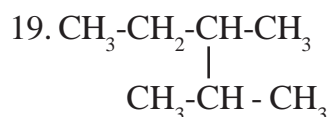
Questions 17-24 carries 3 scores each (3x8 =24)

17. Alumina is dissolved in Cryolite is subjected to electrolysis to get Aluminium.

a) What is the purpose of adding Cryolite in Alumina? (2)

b) Write the chemical equation of reaction taking place at the negative electrode. (1)

18. Find the oxidation state of Fe in $FeCl_3$ and write the Subshell electronic configuration of Fe ion. [Hint : Fe-26]



a) Write the number of Carbon atoms in the main chain. (1)

b) Name the branch. (1)

c) Write the IUPAC name of the compound. (1)

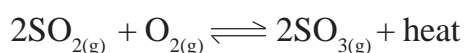
20. 440g Carbon dioxide (CO₂) is taken. [Hint : Atomic mass C -12, O-16]

- a) Calculate the number of moles in it. (1)
- b) Calculate the number of molecule in it. (1)
- c) Calculate the volume of CO₂ in 440g at STP. (1)

21. Iron is industrially prepared in blast furnace.

- a) Which is the major gangue present in haematite? (1)
- b) Which substance acts as the reducing agent in blast furnace? (1)
- c) Write the chemical equation of the formation of slag. (1)

22. The chemical equation of a reversible reaction at equilibrium is given below.



- a) What is meant by equilibrium in a reversible chemical reaction. (1)
- b) Write the chemical equation of backward reaction. (1)
- c) What is the influence of pressure in the reaction? (1)

23. Keep two carbon rods immersed to copper Sulphate solution. Then pass electricity through the solution.

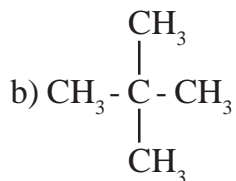
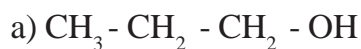
- i) At which electrode does colour change occur - anode/cathode. (1)
- ii) Is there any change in the blue colour of Coppersulphate solution. Give reason. (2)

24. Complete the following table by filling (a), (b) and (c). (1x3=3)

Metals	Refining Method
Cadmium	(a)
Lead	(b)
Copper	(c)

Questions 25-32 carries 4 score each.

25. i) Find out the isomeric pair from those given below. (2)



ii) Mention the type of isomerism in each pair. (2)

26. Complete the table

a) Write the values (a) and (b).

Pressure (P)	Volume (V)
1 atm	80L
(a) atm	20L
8 atm	(b) L

(1)

b) Identify the gas law and state it. (2)

27. Atomic number of manganese is 25.

a) Find the oxidation state of Mn in MnCl_2 (1)

[Hint : oxidation state of chlorine is - 1]

b) Write the subshell electronic configuration of Mn ion in MnCl_2 . (1)

c) Write any two characteristics of the block in which this element belongs. (2)

28. Galvanic cell is an arrangement which changes chemical energy to electrical energy through redox reaction.

a) Construct Zn-Ag galvanic cell. (2)

b) Write the equations of chemical reaction taking place at anode and cathode. (2)

29. Match the following.

A	B
i) $\text{CH}_3 = \text{CH}_2 + \text{H}_2 \rightarrow \text{CH}_3 - \text{CH}_3$	Polymerisation
ii) $\text{CH}_3 - \text{CH}_2 - \text{CH}_3 \rightarrow \text{CH}_2 = \text{CH}_2 + \text{CH}_4$	Substitution reaction
iii) $\text{CH}_4 + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{HCl}$	Addition reaction
iv) $n\text{CH}_2 = \text{CH}_2 \rightarrow \{ \text{CH}_2 - \text{CH}_2 \}_n$	Thermal Cracking

(4)

30. Explain the following with examples.

a) Reversible chemical reactions. (2)

b) Irreversible chemical reactions. (2)

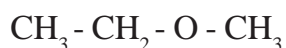
31. The last electron of an atom enters the 3d subshell and the Subshell electronic configuration recorded as $3d^6$

a) How many electrons are there in the outermost shell? (1)

b) Write the Subshell electronic configuration of this element. (1)

c) Write any two characteristics of the block to which this element belongs. (2)

32. The structured formula of an organic compound is given below.



a) Identify the functional group present in this compound. (1)

b) What are the compounds with the given functional group commonly called? (1)

c) Write down the structural formula of its functional isomer and its IUPAC name. (2)