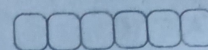


KK11C

Kanniyakumari District  
Common First Revision Examination - 2025



## Standard 11

## CHEMISTRY

Time: 3.00 Hours

Marks: 70

## Part - I

Answer all the questions. Choose the correct answer:

15×1=15

- 1) Which one of the following is used as a standard for atomic mass  
 a)  ${}_6\text{C}^{12}$       b)  ${}_7\text{C}^{12}$       c)  ${}_6\text{C}^{13}$       d)  ${}_6\text{C}^{14}$
- 2) Limiting reagent in a chemical reaction is that reactant which  
 a) left some amount unreached after the completion of reaction  
 b) reacts completely in the reaction  
 c) does not react in the reaction  
 d) All of these
- 3) Splitting of spectral lines in magnetic field is called  
 a) Compton effect    b) shielding effect    c) Zeeman effect    d) stark effect
- 4) The maximum number of electrons that can be accommodated in N shell is  
 a) 23      b) 43      c) 32      d) 22
- 5) Which of the following pairs of elements exhibit diagonal relationship?  
 a) Be and Mg      b) Li and Be      c) Be and B      d) Be and Al
- 6) All the elements in a group in the periodic table have the same  
 a) electronic configuration      b) number of electrons in the valence shell  
 c) Atomic number      d) atomic weight
- 7) In a closed room of  $1000 \text{ m}^3$  a perfume bottle is opened up. The room develops a smell. This is due to which property of gases?  
 a) viscosity      b) Density      c) Diffusion      d) None
- 8) When the gas behaves ideally, the compression factor  $z$  is  
 a)  $> 1$       b)  $< 1$       c)  $= 0$       d)  $= 1$
- 9) In an adiabatic process which of the following is true?  
 a)  $q = w$       b)  $q = 0$       c)  $\Delta E = -q$       d)  $P \Delta V = 0$
- 10) The unit of entropy is  
 a)  $\text{JK}^{-1}\text{mol}^{-1}$       b)  $\text{Jmol}^{-1}$       c)  $\text{JK mol}^{-1}$       d)  $\text{J}^{-1}\text{K}^{-1}$
- 11) If  $x$  is the fraction of  $\text{PCl}_5$  dissociated equilibrium in the reaction  

$$\text{PCl}_5 \rightleftharpoons \text{PCl}_3 + \text{Cl}_2$$
 then starting with 0.5 mole of  $\text{PCl}_5$ , the total number of moles of reactance and products at equilibrium is  
 a)  $0.5 - x$       b)  $x + 0.5$       c)  $2x + 0.5$       d)  $x + 1$



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- 12) If Ar is added to the equilibrium  $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$  at constant volume, then equilibrium will
- a) Shift in forward direction                      b) Not shift in-any direction  
c) Shift in reverse direction                      d) All are incorrect
- 13) How many cyclic and acyclic isomers are possible for the molecular formula  $C_3H_6O$ ?
- a) 4                      b) 5                      c) 9                      d) 10
- 14) Which of the following is an example of non-benzenoid aromatic compound
- a) Toluene                      b) Phenol                      c) Benzyl alcohol                      d) Azulene
- 15) Which of the following species does not acts as a nucleophile?
- a) ROH                      b) ROR                      c)  $PCl_3$                       d)  $BF_3$

## Part - II

Answer any six questions. Answer No. 23 is compulsory:

6×2=12

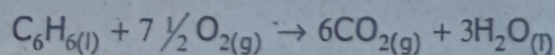
- 16) Define Avogadro number
- 17) An atom of an element contains 35 electrons and 45 neutrons Deduce
- a) The electronic configuration for the element  
b) All four quantum numbers for the last electron
- 18) What are isoelectronic ions? Give examples
- 19) When ammonia combines with HCl,  $NH_4Cl$  is formed as white dense fumes. Why do more fumes appear near HCl?
- 20) Write the condition for the spontaneous process
- 21) State Le-Chatelier principle
- 22) Write a note on homologous series
- 23) 0.185 g of an organic compound, when treated with con. $HNO_3$  and silver nitrate gave 0.320 g silver bromide. Calculate the percentage of bromine in the compound [Ag=108, Br=80]
- 24) What is inductive effect.

## Part - III

Answer any six questions. Answer No. 29 is compulsory:

6×3=18

- 25) How many moles of hydrogen is required to produce 10 moles of ammonia
- 26) State and explain Pauli exclusion principle
- 27) Compare the ionisation energy of beryllium and boron
- 28) Explain the different methods used for liquefaction of gas
- 29) From the following data at constant volume for combustion of benzene, Calculate the heat of this reaction at constant pressure condition



$$\Delta U \text{ at } 25^\circ C = -3268.12 \text{ KJ}$$

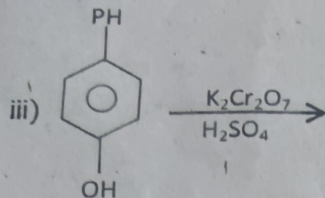
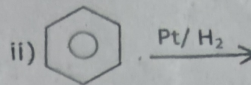
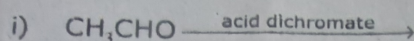
- 30) Derive the relation between  $K_p$  and  $K_c$



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- 31) Write the structure for the following compounds
- 3-methyl pentane
  - Octane-1, 3, - diene
  - 1, 3 dimethyl cyclohexane
- 32) Briefly explain geometrical isomerism in alkene by considering 2-butene as an example
- 33) Write the product of the following



### Part - IV

Answer all the questions.

5×5=

- 34) a) i) Calculate the molar mass of the following compounds (3M)
- Urea [ $\text{CO}(\text{NH}_2)_2$ ]
  - Boric acid [ $\text{H}_3\text{BO}_3$ ]
  - Glucose [ $\text{C}_6\text{H}_{12}\text{O}_6$ ]
- ii) Calculate the oxidation number of (2M)
- 'C' in  $\text{CH}_2\text{F}_2$
  - 'O' in  $\text{H}_2\text{O}_2$

(OR)

- b) i) Write a note on decomposition redox reaction (2M)
- ii) Derive De-Broglie relation (3M)
- 35) a) i) What is exchange energy (2M)
- ii) Write the assumptions of Bohr's atom model (3M)
- (OR)
- b) i) Why halogens act as an oxidising agent? (2M)
- ii) Briefly give the basis for Pauling's scale of electronegativity
- 36) a) i) State Boyle's law (2M)
- ii) What is compressibility factors?

How is compressibility factor expressed in terms of molar volume of real gas and that of the ideal gas (3M)

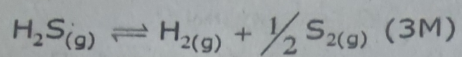
(OR)

- b) i) What is inversion temperature (2M)
- ii) Distinguish intensive and extensive properties (3M)
- 37) a) State the various statements of second law of thermodynamics
- (OR)
- b) i) At particular temperature  $K_c = 4 \times 10^{-2}$  for the reaction

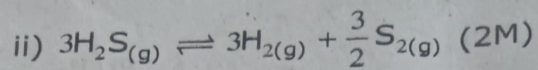
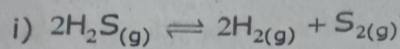


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Calculate  $K_c$  for each of the following reaction



ii) Write the balanced chemical equation for the  $K_c = \frac{[\text{CaO}_{(s)}][\text{CO}_{2(g)}]}{[\text{CaCO}_{3(s)}]}$

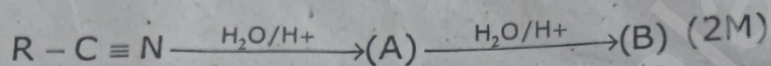
38) a) i) Give the general characteristics of organic compounds (3M)

ii) Give the condition for steam distillation (2M)

(OR)

b) i) Write a note on Baker nathan effect (3M)

ii) Identify the compound (A) and (B)



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