

Tamilnadu Board Common Half Yearly Question Paper 2018
Class 11 Chemistry

Standard 11
CHEMISTRY

Time Allowed: 2.30 Hrs.

Maximum Marks: 70

Section - I

Note: i) Answer all the questions. **15×1=15**
ii) Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer.

- 1) 7.5g of a gas occupies a volume of 5.6 litres at 0°C and 1 atm pressure. The gas is
a) NO b) N₂O c) CO d) CO₂
- 2) Match the List I and List II correctly by using the code given below:
- | List - I | | | | List - II | | | | | |
|------------------------------|-----|-----|-----|-----------------------------|-----|-----|-----|-----|---|
| A) 4s orbital | | | | 1. Rutherford's experiment | | | | | |
| B) 3d ⁶ | | | | 2. 3 nodal planes | | | | | |
| C) Limitation of Bohr theory | | | | 3. Partially filled orbital | | | | | |
| D) Existence of nucleus | | | | 4. Multi electron atom | | | | | |
| | (A) | (B) | (C) | (D) | (A) | (B) | (C) | (D) | |
| a) | 1 | 2 | 3 | 4 | 5. | 2 | 3 | 4 | 1 |
| c) | 4 | 3 | 2 | 1 | d) | 2 | 4 | 1 | 3 |
- 3) The energy of light of wavelength 45 nm is
a) $6.67 \times 10^{15} \text{g}$ b) $6.67 \times 10^{11} \text{g}$ c) $4.42 \times 10^{-18} \text{J}$ d) $4.42 \times 10^{-15} \text{J}$
- 4) In the third period, the first ionization potential is in the order
a) Na > Al > Mg > Si > P b) Na < Al < Mg < Si < P
c) Mg > Na > Si > P > Al d) Na < Al < Mg < P < Si
- 5) Water is/an
a) basic oxide b) acidic oxide c) amphoteric oxide d) none of these
- 6) The product obtained as a result of a reaction of nitrogen with CaC₂ is
a) Ca(CN)₃ b) CaN₂ c) Ca(CN)₂ d) Ca₃N₂
- 7) If the pressure of the gas in a 10L container is 5 atm, then the pressure of the same gas in 15L container
a) 15 atm b) 10 atm c) 7.5 atm d) 3.25 atm
- 8) Which of the following statement/s is/are correct?
1. Molar heat of vaporization is an intensive property.
2. Formation of ice is an exothermic process.
3. Lattice energy decides the stability of ionic compounds.
4. At absolute zero entropy is positive.
a) 1, 3, 4 b) 4 only c) 1, 2, 3 d) 2 and 3
- 9) The initial and final temperatures of a heat engine are 816°C and 21°C respectively. The percentage efficiency is
a) 73% b) 23% c) 45% d) 37%
- 10) An equilibrium constant of 3.2×10^{-6} for a reaction means, the equilibrium is
a) Largely towards forward reaction b) Largely towards reverse reaction
c) Never established d) None of these
- 11) Which of the binary mixtures exhibits positive deviation from Raoult's Law?
a) Acetone + Chloroform b) Water + Nitric acid
c) HCl + Water d) Ethanol + Water
- 12) In an organic compound, phosphorous is estimated as
a) Mg₂P₂O₇ b) Mg₃(PO₄)₂ c) (NH₄)₃PO₄ · 12MoO₃ d) Both a and c
- 13) **Statement** : Chloro acetic acid is more acidic than acetic acid.
Reason : Chloro group has +I effect.
a) Both Assertion, Reason are correct. b) Assertion is false, Reason are correct.
c) Assertion is correct, Reason is false. d) Both Assertion and Reason are false.

- 14) In the hydrocarbon $\text{CH}_2=\text{C}=\text{CH}_2$, the state of hybridization of carbon 1, 2, 3 respectively.
 a) sp, sp^2, sp^3 b) sp^3, sp^2, sp^3 c) sp^2, sp, sp d) sp^2, sp^2, sp^2
- 15) Benzene reacts with chlorine in presence of sunlight gives a compound (A). The compound and its use are
 a) C_6Cl_6 ; insecticide b) $\text{C}_6\text{H}_6\text{Cl}_6$; insecticide
 c) $\text{C}_6\text{H}_5\text{Cl}$; insecticide d) $\text{C}_6\text{H}_6\text{Cl}_5$; sterilising agent

Section - II

Answer any six questions and question number 18 is compulsory: $6 \times 2 = 12$

- 16) Write the electronic concept of oxidation and reduction reactions
 17) What are isoelectronic ions?
 18) Write the combustion of n-hexane with equation.
 19) Mention the uses of plaster of paris.
 20) Distinguish real and ideal gases.
 21) Mention any two methods of converting para hydrogen into ortho hydrogen.
 22) 0.6% solution of urea and 1.8% solution containing a solute (A) are isotonic with each other. Calculate the molecular weight of the solute (A).
 23) How would you detect the presence of sulphur in an organic compound?
 24) Draw the staggered and eclipsed conformers of n-butane.

Section - III

Answer any six questions and question number 27 is compulsory: $6 \times 3 = 18$

- 25) How many moles of hydrogen is required to produce 10 moles of ammonia?
 26) State Pauli's exclusion principle.
 27) Find out the Δ_{vap} values and write the K_c and K_p relation for the equilibrium reactions.
 (i) Decomposition of ammonia (ii) Formation of NO
 28) How does iron react with steam?
 29) Give the expressions of critical constants.
 30) Write the electrode reactions involved in the electrolytic method of preparation of sodium hydroxide.
 31) State Henry's Law.
 32) Give the structural formulae of the following compounds:
 (i) 3-cyclohexyl pentan-2-one (ii) 2-ethylbut-3-enoic acid
 33) Write Friedel-Craft's reaction.

Section - IV

Answer all the questions:

$5 \times 5 = 25$

- 34) i) Calculate the number of molecules in 22g of methane. (2)
 ii) Calculate the effective nuclear charge of Na^+ ion. (3) (OR)
 Discuss the assumptions of Bohr model of the atom. (5)
 35) i) Give two examples of each of the type of hydrogen bonding. (2)
 ii) How do alkali metals react with oxygen? (3) (OR)
 Explain Andrew's isotherm of carbon dioxide. (5)
 36) Derive the relation between ΔH and ΔU for an ideal gas. (5) (OR)
 i) Define molal boiling point elevation constant. (2)
 ii) Trans isomer is more stable than cis isomer. Why? (3)
 37) Explain the substitution reaction and elimination reaction with examples (5)
 i) What is oxidation number? (2)
 ii) How will you distinguish terminal and non-terminal alkynes? (3)
 38) i) Identify the period number and group number of the given elements.
 (a) Calcium (b) Silver (2)
 ii) Hard water forms scum with (A) of formula C_2H_2 on ozonolysis, followed by hydrolysis yields (B) and (C). Further (A) reacts with HBr to form (D). Identify (A) to (D) and explain the reactions. (3) (OR)