Tsl11C

Tenkasi District
Common First Revision Test - January 2025

20-01-25

Standard - 11
CHEMISTRY

Time Allowed:3.00 Hours Maximum Marks: 70

Note: Draw diagrams and write equations wherever necessary.

PART - I

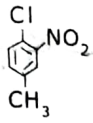
Note: 1. Answer all the questions. **15×1=15**
2. Choose the most suitable answer from the given four alternatives.

1. The molar mass of boric acid (H_3BO_3) is
   a) 58 $gmol^{-1}$ b) 61 $gmol^{-1}$ c) 78 $gmol^{-1}$ d) 63 $gmol^{-1}$
2. The energies of E_1, and E_2 of two radiations are 25 ev and 50 ev respectively. The relations between their wavelengths λ_1 and λ_2 will be.
   a) $\frac{\lambda_1}{\lambda_2} = 1$ b) $\lambda_1 = 2\lambda_2$
   c) $\lambda_1 = \sqrt{25 \times 50\lambda_2}$ d) $2\lambda_1 = \lambda_2$
3. Which of the following elements will have the highest electronegativity?
   a) Chlorine b) Nitrogen c) Calsium d) Fluorine
4. Volume strength of 1.5N H_2O_2 is
   a) 1.5 b) 4.5 c) 16.8 d) 8.4
5. Which of the following is true
   a) Lithium on direct combination with nitrogen to form Li_3N
   b) Magnesium on direct combination with nitrogen to form Mg_3N_2
   c) Both (a) and (b)
   d) Lithium form bicarbonates
6. The pressure exerted by 2 moles of sulphur hexa-fluoride in a steel vessel of volume 6dm^3 at 70°C assuming it as an ideal gas is.
   a) 9.39 atm b) 8.40 atm c) 12.5 atm d) 10.2 atm
7. Which of the following is not a thermodynamic function?
   a) Internal energy b) enthalp c) entropy d) frictional energy
8. Match the list I and list II using the code given below the list.

List I	List II
A) $H_{2(g)}+I_{2(g)} \rightleftharpoons 2HI$	1) $\Delta ng=1$
B) $2SO_{2(g)}+O_{2(g)} \rightleftharpoons 2SO_{3(g)}$	2) $\Delta ng=0$
C) $2NH_{3(g)} \rightleftharpoons N_{2(g)}+3H_{2(g)}$	3) $\Delta ng=-1$
D) $PCl_{5(g)} \rightleftharpoons PCl_{3(g)}+Cl_{2(g)}$	4) $\Delta ng=2$

Code	A	B	C	D
a)	4	2	1	3
b)	2	3	4	1
c)	3	1	2	4
d)	1	4	3	2

9. Which of the following binary liquid mixtures exhibits positive deviation from Raoull's law?
   a) acetone + chloroform b) water + nitric acid
   c) HCl + water d) ethanol + water
10. Which one of the following has bond order as 2.5?
    a) O_2 b) NO c) CO d) H_2
11. Ortho and para- nitro phenol can be separated by
    a) azeotropic distillation b) destructive distillation
    c) steam distillation d) cannot be separated
12. Assertion : Tertiary carbocations are generally formed more easily than primary carbocations ions.
    Reason : Hyper conjugation as well as inductive effect due to additional alkyl group stabilize tertiary carbonium ions.
    a) both assertion and reason are true and reason is the correct explanation of assertion.
    b) both assertion and reasons are true, but reason is not the correct explanation of assertion
    c) Assertion is true but reason is false d) Both assertion and reason are false

13. IUPAC name for 

a) 1- chloro - 2-nitro - 4 methyl benzene b) 1- chloro -4- methyl - 2 nitro benzene
c) 2- chloro -1-nitro -5- methyl benzene d) m - Nitro- P-chloro toluene

14. Chloroform reacts with nitric acid to produce
a) Nitrotoluene b) Nitroglycerine c) Chloropicrin d) Chloropicric acid

15. The pH of normal rain water is
a) 6.5 b) 7.5 c) 5.6 d) 4.6

PART - II

Note: Answer any six questions. Question Number 19 is compulsory. **6×2=12**

16. What are limiting agents?
17. The Ionisation potential of Boron is less than that of Berylliums. Why?
18. Why interstitial hydrides have a low density than. the parerst metal?
19. The compressibility factor for ideal gas is unity (z=1). Give reason.
20. State Hess's law.
21. What is reverse osmosis.
22. Give examples for the following types of organic reactions.
(i) β -elimination
(ii) Electrophilic substitution
23. How will you prepare alkanes from Grignard reagent.
24. What is green chemistry?

PART - III

Note: Answer any six questions. Question Number 29 is compulsory. **6×3=18**

25. Distinguish between oxidation and reduction.
26. Which ion is highly stable Ni^{2+} or Fe^{3+}. Why?
27. Write the exchange reactions of deuterium.
28. State Graham's law of diffusion.
29. The equilibrium constant kp for the reaction $N_{2(g)}+3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ is 8.19×10^{2} at 298k and 4.6×10^{-1} at 498k. Calculate ΔH^{o} for the reaction.
30. In CH_4, NH_3 and H_2O, the central atom undergoes. sp^3 hybridisation yet their bond angles are different. why?
31. Describe the principle behind chromatography.
32. Give the difference between electrophile and nucleophile.
33. What are particulate pollutants? Explain any Three.

PART - IV

Note: Answer all the questions. **5×5=25**

34. a) (i) How many moles of ethane is required to produce 44g of $CO_{2(g)}$ after combustion. (2)
(ii) Define orbital. What are the n and ℓ values for 3px and 4 dx^2-y^2 electron. (3) **(OR)**
b) Define electronegativity. State the trends in the variation of electronegativity in group and periods. (5)

35. a) (i) Explain the preparation of washing soda by solvay process. (3)
(ii) Write any two uses of magnesium. (2)
b) List the characteristics of Gibbs free energy. (5) **(OR)**

36. a) Derive kp and kc for the dissociation of Pcl_5. (5)
b) (i) Obtain expressions for lowering of vapour pressure when non-valatile solute is dissolved in solvent. (3) **(OR)**
(ii) Give the limitations of Henry's law. (2)

37. a) (i) Apply VSEPR theory to predict the shapes of Pcl_5, SF_6 and IF_7 . (3)
(ii) What is bond order. (2)
b) (i) Explain Geometrical isomerism with example. (3) **(OR)**
(ii) Give the structure for the following compounds. (2)
a) 3-Chlorobutanal
b) 3-methyl but -1-ene.

38. a) (i) Explain cyclic polymerisation of acetylene (2).
(ii) Identify the compounds X, Y and Z in the following reaction. (3)

$$C_2H_6O \xrightarrow[623K]{Al_2O_3} X \xrightarrow{O_3} Y \xrightarrow{Zn/H_2O} Z$$

b) Explain the following reactions. (5) **(OR)**
(i) Dow's process
(ii) Carbyl amine reaction
(iii) Fittig reaction

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