

Department of Chemistry
Quaid-I-Azam University
M.Phil Admission Sample Test
Inorganic/Analytical Chemistry

Max. Marks:40

Name:

Roll No:

Father's name:

Date:

Time: 60 mins

NOTE: Attempt all questions. Encircle the correct option/s in each of the following statements. Forty (40) such questions will be given

1. Plants look green due to the absorption of
i) Green Light ii) Blue light iii) Red light iv) Yellow light

2. Center of distribution is given by
i) Mean ii) Mode iii) Average iv) Standard deviation

3. Change in concentration during titration is measured by
i) Conductivity ii) Voltammetry iii) Coulometry
iv) Polarography

4. In Raman spectroscopy the most intense line is
i) Stoke ii) Anti-stoke iii) Rayleigh iv) none of these

5. The solubility of barium sulphate at 25°C is $1.05 \times 10^{-5} \text{ mol dm}^{-3}$. The solubility product
i) $1.10 \times 10^{-10} \text{ mol dm}^{-1}$ ii) $1.10 \times 10^{-10} \text{ mol}^2 \text{ dm}^{-6}$ iii) $0.001 \text{ mol dm}^{-1}$ iv) $10.5 \times 10^{-6} \text{ mol}^2 \text{ dm}^{-6}$

6. Lamp used in flame photometry is
- i) HCL ii) Xe iii) Deuterium iv) none of these
7. Among the following, the secondary pollutant is
- i) PAN ii) CO₂ iii) NO_x iv) SO_x
8. Which of the following complex ion is tetrahedral?
- (a) [PdCl₄]²⁻ (b) [Ni(CN)₄]²⁻ (c) [NiCl₄]²⁻ (d) [AuCl₄]⁻
9. What is the order of decreasing vibrational frequency for
- a) C — Cl b) C — Br c) C — C d) C — O e) C — H
- i) a>b>c>d>e ii) e>b>a>c>d iii) d>e>a>b>c iv) b>a>e>c>d
10. The relation between dipole magnetic moment (μ) and nuclear spin (I) is given by a constant called
- i) Gyromagnetic ratio (γ) ii) Planck's constant (h) iii) Nuclear susceptibility (χ)
- iv) Chemical shift (δ)
11. Which of the following has exchangeable protons with water
- i) CH₃OH ii) (CH₃)₃N iii) (CH₃)₂O iv) CH₃Br
12. Which of the following is tetrahedral?
- i) [PtCl₄]²⁻ ii) [PdCl₄]²⁻ iii) [AuCl₄]⁻ iv) [NiCl₄]²⁻
13. Which of the following molecule has center of symmetry
- i) CH₄ ii) NH₃ iii) H₂ iv) PCl₃
14. Conc. HNO₃ upon thermal decomposition give
- i) NO ii) NO₂ + O₂ iii) N₂ + O₂ iv) NO₃⁻

15. CO₂ is isostructural to
 i) HgCl₂ ii) SiO₂ iii) SO₂ iv) NO₂
16. MnSO₄·2H₂O has magnetic moment value
 i) 5.08 ii) 5.92 iii) 2.08 iv) 4.55
17. 2nd Ionization Energy trend in K, Ca, Ba is
 i) K>Ca>Ba ii) Ba>Ca>K iii) Ca>K>Ba iv) K>Ba>Ca
18. X-ray diffraction analysis provides _____ information
 i) Qualitative ii) Quantitative iii) Both a & b iv) None of these
19. Which one of the following does not obey 18-electron rule?
 i) Cr(CO)₆ ii) Fe(CO)₅ iii) V(CO)₆ iv) Mn₂(CO)₁₀
20. Alkali metals dissolve in liq. NH₃ to give _____ color
 i) Red ii) Blue iii) Green iv) None
21. A 40.0 gram sample of I-131 with half-life of 8.04 days will decay to 1/100 of its original mass in _____ days
 i) 29.4 ii) 100 iii) 53.4 iv) 45.43
22. The autodissociation of POCl₃ will give
 (a) $2\text{POCl}_3 \rightleftharpoons \text{POCl}_2^+ + \text{POCl}_4^-$
 (b) $2\text{POCl}_3 \rightleftharpoons \text{POCl}^+ + \text{POCl}_5^-$
 (c) $2\text{POCl}_3 \rightleftharpoons \text{POCl}_3^+ + \text{POCl}_3^-$
 (d) none of these