CHEMISTRY TEST

TOPICS: ATOMIC STRUCTURE & CLASSIFICATION OF ELEMENTS AND PERIODIC PROPERTIES

1. Modern periodic table is based on the atomic number of elements. The experiment which proved the significance of the atomic number was

1) Mullikan's oil drop experiment
2) Moseley's work on X-ray spectra
3) Bragg's work on X-ray diffraction
4) Discovery of X-rays by Rontgen

2. If the differentiating electron enters (n-1) d-sublevel. The element is.

1) a representative element
2) a noble gas
3) an alkali metal
4) a transition element

3. The plot of √v vs Z is

1) straight line
2) exponential curve
3) hyperbolic
4) curve with -ve slope

4. Mendeleef corrected the atomic weight of

1) Be
2) N
3) O
4) Cl

5. The name of the element with atomic number 100 was adopted in honour of

1) Alfred Noble
2) Enric Fermi
3) Dimitri Mendeleev
4) Albert Einstein

6. Which of the following grouping represents a collection of iso-electronic species?

1) Ca^{2+}, Cs^{2+}, Br
2) Na^{+}, Ca^{2+}, Mg^{2+}
3) N^{3-}, F^{-}, Na^{+}
4) Be, Al^{3+}, Cl^{+}

7. Which one of the following pairs of atomic numbers, represents elements belonging to same group?

1) 11,20
2) 13,30
3) 13,31
4) 14,33

8. The first lanthanide is

1) La
2) Ce
3) Th
4) Lu

9. The atomic number of an element always equal to

1) Number of neutrons in nucleus
2) Half of the atomic weight
3) Electrical charge of the nucleus
4) Weight of the nucleus

10. The position of element with Z=24 in the periodic table is

1) VA group & 4 period
2) ViB group & 4 period
3) iVA group & 3 period
4) IIIB group & 3 period

11. O^{2-} and Si^{4+} are isoelectronic ions. If the ionic radius of O^{2-} is $1A^0$, the ionic radius of Si^{4+} will be

1) 1.4 A^0
2) 0.41 A^0
3) 2.8 A^0
4) 1.5 A^0

12. The correct order of variation in the sizes of atoms is

1) Be>C>F>Ne 2) Be>C<F<Ne 3) Be>C>F<Ne 4) F>Ne>Be>C

13. The Lanthanide contraction is responsible for the fact that

1) Zr and Hf have same radius 2) Zr and Hf have same oxidation state

3) Zr and Y have same radius 4) Zr and Nb have similar oxidation state

14. The IP_1 of potassium is 4.339 eV/atom. The IP_1 of sodium will be.

1) 4.339 2) 2.21 3) 5.138 4) 1.002

15. Which of the following relations is correct with respect to first(I) and second (II) ionization potentials of sodium and magnesium?

1) $I_{Na}>I_{Mg}$ 2) $I_{Mg}>II_{Na}$ 3) $II_{Mg}>II_{Na}$ 4) $II_{Na}>II_{Mg}$

16. The process requiring the absorption of energy is

1) F ---> F^- 2) Cl ---> Cl^- 3) O^----> O^{2-} 4) H ---> H^-

17. The element with high electron affinity is

a) nitrogen 2) oxygen 3) sulphur 4) phosphorous

18. Which of the following is large radius?

1) crystal 2) covalent 3) vanderwaal's 4) All are same

19. In the sixth period, the orbitals being filled are

1) 5s,5p,5d 2) 6s,6p,6d,6f 3) 6s,5f,6d,6p 4) 6s,4f,5d,6p

20. The pair of elements that have similar chemical properties are

1) Li &Mg 2) Be & B 3) Al & Mg 4) C & N

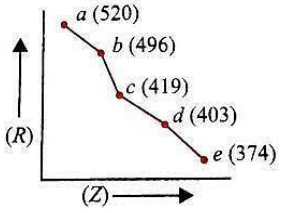
21. In the given graph, a periodic property (R) is plotted against atomic numbers(Z) of the elements. Which property is shown in the graph and how is it correlated with reactivity of the elements?

1) Ionisation enthalpy in a group, reactivity decreases from a→e

2) Ionisation enthalpy in a group, reactivity increases from a→e

3) Atomic radius in a group, reactivity decreases from a→e

4) Metallic character in a group, reactivity increases from a→e



22. In which of the following, the order is not in accordance with the property mentioned.

1) Li<Na<K<Rb-Atomic radius 2) F>N>O>C-Ionisation enthalpy

3) Si<P<S<Cl-Electronegativity 4) F<Cl<Br<I-Electronegativity

23. What is the name and symbol of the element with atomic number 112?

1) Ununbium,Uub 2) Unnilbium, Unb 3) Ununnillium, Uun 4) Ununtrium, Uut

BMCC

24. An element has atomic number 79. Predict the group and period in which the element is placed.

1) 2^{nd} group, 7^{th} period 2) 11^{th} group, 6^{th} period 3) 13^{th} group,6^{th} period 4) 12^{th} group,6^{th} period

25. The correct order of acidic character of oxides in third period of periodic table is

1) $SiO_2<P_4O_{10}<SO_3<Cl_2O_7$ 2) $Cl_2O_7<SO_3<P_4O_{10}$ 3) $SO_3<Cl_2O_7<P_4O_{10}$ 4) $SiO_2<Cl_2O_7<P_4O_{10}<SO_3$

26. Which quantum number is not related with Schrodinger equation

1) principal 2) azimuthal 3) magnetic 4) spin

27. Nitrogen has the electronic configuration $1s^2\ 2s^2\ 2p_x^1 2p_y^1 2p_z^1$ and not $1s^2 2s^2 2p_x^2 2p_y^1 2p_z^0$ which is determined by

1) Aufbau's principle 2) Pauli's exclusion principle 3) Hund's rule 4) Uncertainty principle

28. The total spin resulting from a d^7 configuration is

1) 1/2 2) 3/2 3) 2/3 4) 1

29. The number of radial nodes of 3s,3p and 3d electrons are respectively

1) 0,1,2 2) 2,1,0 3) 1,3,5 4) 3,2,0

30. The maximum number of electrons in a p-orbital with n=6 and m=0 can be:

1) 14 2) 6 3) 2 4) 10

31. If n=6, the correct sequence for filling of electrons will be:

1) ns, (n-2) f, (n-1) d, np 2) ns, (n-1) d, (n-2) d, np

3) ns, (n-2) f, np, (n-1) d 4) ns, np(n-1) d, (n-2) f

32. 4d, 5p, 5f and 6p orbitals are arranged in the order of decreasing energy. The correct option is

1) 5f>6p>5p>4d 2) 6p>5f>5p>4d 3) 6p>5f>4d>5p 4) 5f>6p>4d>5p

33. What is the value of electron gain enthalpy of Na^+ if IE_1 of Na = 5.1 eV?

1) -5.1 eV 2) -10.2 eV 3) +2.55 eV 4) +10.2 eV

34. For electrons having principal quantum number as 3, the number of (i) subshells and (ii) orbitals would be respectively

1) 3 and 5 2) 3 and 7 3) 3 and 9 4) 2 and 5

35. The orbital angular momentum of a p-electron is given as

1) $h/\sqrt{2}\pi$ 2) $\sqrt{(3/2)}\ \pi$ 3) $\sqrt{(3/2)}\ (h/\pi)$ 4) $\sqrt{6}(h/2\pi)$

36. Maximum number of electrons in a subshell with: l=3 and n=4 is

1) 14 2) 16 3) 10 4) 12

37. What is the maximum number of orbitals that can be identified with the following quantum numbers? n=3, l=1, m=0

1) 1 2) 2 3) 3 4) 4

38. The subshell that arises after 'f' is called 'g' subshell. How many electrons may occupy the 'g' subshell?

1) 9 2) 7 3) 5 4) 18

39. The elements in which electrons are progressively filled in 4f-orbitals are called

1) actinoids 2) transition elements 3) lanthanoids 4) halogens

40. The order of screening effect of electrons of s, p, d and f orbitals of a given shell of an atom on its outer shell electronsis

1) S > p > d > f 2) f > d > p > s 3) p > d > s > f 4) f > p > s > d

41. Among halogens, the correct order of amount of energy released in electron gain enthalpy is

1) F > Cl > Br > I 2) F < Cl < I < Br 3) F < Cl > Br > I 4) F < Cl < Br < I

42. Which set contains pair of elements that do not belong to same group but show chemical resemblance?

1) Hf, Zr 2) K, Rb 3) Be, Al 4) B, Al

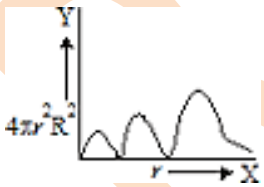
43. The ratio of magnetic moments of Fe (III) and Co (II) is:

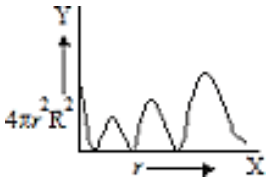
1) √5 : √7 2) √35 : √15 3) 7 : 3 4) √24 : √15

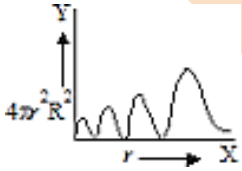
44. Three elements 'X' , 'Y' and 'Z' have atomic numbers 18, 19 and 20 respectively. How many electrons are present in the M shells of these elements?

1) 8, 9, 10 2) 8, 10, 13 3) 8, 8, 8 4) 8, 9, 12

45. Which of the following is the correct representation of plot radial probability ($4\pi r^2R^2$) in Y- axis vs distance from the nucleus in X- axis for 1- electron of 4d-atomic orbital?

1) 

2) 

3) 

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