

UNIT TEST-2,3,4

CLASS : XI
SUBJECT : CHEMISTRY

TIME : 3.00 hr
MARKS : 70

PART-I

I. Choose and write the correct answer :

15X1=15

- Tritium nucleus contains
(a) $1p + 0n$ (b) $2p + 1n$ (c) $1p + 2n$ (d) $2p + 0n$
- The type of H-bonding present in orthonitro phenol and p-nitro phenol are _____ Respectively.
(a) Inter molecular H-bonding and intra molecular H-bonding
(b) Intra molecular H-bonding and inter molecular H-bonding
(c) Intra molecular H-bonding and no H-bonding
(d) Intra molecular H-bonding and intra molecular H-bonding
- Water gas is :
(a) $CO + H_2$ (b) $H_2O(g)$ (c) $CO + N_2$ (d) $CO + H_2$
- The cause of permanent hardness of water is due to
(a) $Ca(HCO_3)_2$ (b) $Mg(HCO_3)_2$ (c) $CaCl_2$ (d) $MgCO_3$
- What percentage of solution of H_2O_2 is called as "100-volume" H_2O_2 ?
(a) 15% (b) 50% (c) 20% (d) 30%
- Which of the following is the least electronegative element?
(a) Bromine (b) Chlorine (c) Iodine (d) Hydrogen
- Assertion : Helium has the highest value of ionisation energy among all the elements known.
Reason : Helium has the highest value of electron affinity among all the elements known.
(a) Both assertion and reason are false
(b) Both assertion and reason are true and the reason is correct explanation for the assertion
(c) Both assertion and reason are true but the reason is not the correct explanation for the assertion
(d) Assertion is true and reason is false
- Which of the following pairs of elements exhibit diagonal relationship ?
(a) Be and Al (b) Li and Be (c) Be and B (d) Be and Al
- In a given shell the order of screening effect is
(a) $s > p > d > f$ (b) $s > p > f > d$ (c) $f > d > p > s$ (d) $f > p > s > d$
- What would be the IUPAC name for an element with atomic number 112 ?
(a) Ununbium (b) Unnilbium (c) Unbibium (d) Ununseptium
- Splitting of spectral lines in an electric field is called _____
(a) Compton effect (b) Stark effect
(c) Zeeman effect (d) shielding effect

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12. Time independent Schrodinger wave equation is :

(a) $\hat{H} \Psi = E \Psi$

(b) $\nabla^2 \Psi + \frac{8\pi^2 m}{h^2} (E+V)\Psi=0$

(c) $\frac{\partial^2 \Psi}{\partial x^2} + \frac{\partial^2 \Psi}{\partial y^2} + \frac{\partial^2 \Psi}{\partial z^2} + \frac{2m}{h^2} (E-V)\Psi=0$

(d) $\frac{\partial^2 \Psi}{\partial x^2} + \frac{\partial^2 \Psi}{\partial y^2} + \frac{\partial^2 \Psi}{\partial z^2} - \frac{2m}{h^2} (E-V)\Psi=0$

13. What is the maximum numbers of electrons that can be associated with the following set of quantum numbers ? $n = 3, l = 1$ and $m = -1$

(a) 4

(b) 6

(c) 2

(d) 10

14. The maximum number of electrons in a sub shell is given by the expression

(a) $4l + 2$

(b) $2n^2$

(c) $n+1$

(d) $2l+1$

15. Effective nuclear charge of helium is _____

(a) 1.30

(b) 1.70

(c) 2.00

(d) 0.30

PART-II

II. Answer any six questions (Q.no.24 is compulsory)

6 x 2 =12

16. How many orbitals are possible for $n=4$?

17. Define Orbital .

18. What is exchange energy ?

19. Give the general electronic configuration of lanthanides and actinides

20. State Modern Periodic law

21. Define electronegativity

22. What is ortho and para hydrogen ?

23. What is water-gas shift reaction ?

24. Write the exchange reactions of Deuterium ?

PART-III

III. Answer any six questions (Q.no.33 is compulsory)

6 x 3 =18

25. Calculate the total number of angular nodes and radial nodes present in $3d$ and $4f$ orbitals.

26. State Aufbau principle

27. State Heisenber's Uncertainty Principle

28. Why halogens act as oxidising agents?

29. Explain the fact that the second ionisation potential is always higher than first ionisation potential

30. Mention the three types of covalent hydrides

31. What are the uses of heavy water ?

32. What are isotopes ? Write the names of isotopes of Hydrogen ?

33. Calculate the effective nuclear charge on $4s$ electron and $3d$ electron in Scandium

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PART-IV**IV. Answer all the questions .****5x5=25**

34. a) Write the assumptions of Bohr atom model ?
(OR)
b) i) state and explain pauli's exclusion principle.(3)
ii) Write the stable electronic configuration of copper and chromium?(2)
35. a) i) Explain diagonal relationship(3)
ii) compare the ionisation energy of Nitrogen and oxygen(2)
(OR)
b) i) Define ionisation energy(2)
ii) Describe the periodic trend of ionization potential(3)
36. a) Describe the pauling method for determination of ionic radius.
(OR)
b) i) Describe about principal Quantum number ?(3)
ii) Define electron affinity(2)
37. a) How do you convert para hydrogen into ortho hydrogen ?
(OR)
b) i) Write the laboratory method of preparation of hydrogen? (2)
ii) What are Interstitial hydrides ? Given an example. (3)
38. a) Give the uses of hydrogen.
(OR)
b) Write short note on :
i) Magnetic Quantum Number (2 ½)
ii) Azimuthal Quantum Number (2 ½)

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