

UNIT TEST -II

CLASS : XI
SUBJECT : CHEMISTRY

TIME : 1.00 hr
MARKS : 40

PART-I

CHOOSE THE CORRECT ANSWER :

10 X 1 = 10

- The energy of an electron in the third orbit of hydrogen atom is $-E$.
The energy of an electron in the first orbit will be _____
a) $-3E$ b) $\frac{E}{3}$ c) $\frac{E}{9}$ d) $-9E$
- The total number of orbitals associated with the Principal Quantum Number $n = 3$?
(a) 5 (b) 9 (c) 7 (d) 8
- Two electrons occupying the same orbital are distinguished by
(a) azimuthal quantum number (b) spin quantum number
(c) magnetic quantum number (d) principal quantum number
- The maximum number of electrons in a sub shell is given by the expression
(a) $4l + 2$ (b) $2n^2$ (c) $n+1$ (d) $2l+1$
- 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) $\frac{\partial^2 \Psi}{\partial x^2} + \frac{\partial^2 \Psi}{\partial y^2} + \frac{\partial^2 \Psi}{\partial z^2} - \frac{2m}{h^2} (E-V)\Psi=0$
- Splitting of spectral lines in an electric field is called :
(a) Compton effect (b) Zeeman effect
(c) Stark effect (d) Shielding effect
- 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
- Assertion : Number of radial and angular nodes for 3p orbital are 1, 1 respectively
Reason : Number of radial and angular nodes depends only on principal quantum number
(a) both assertion and reason are true and reason is the correct explanation of assertion.
(b) both assertion and reason 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

9. Match the following

- i) s orbital - a) dumb-bell
 ii) p orbital - b) No definite shape
 iii) d orbital - c) spherical
 iv) f orbital - d) clover leaf

- (a) i) - a , ii)- c , iii)- , iv)- d
 (b) i) - c , ii)- a , iii)- d , iv)- b
 (c) i) - b , ii)-d , iii)- c , iv)- a
 (d) i) -d , ii)-a , iii)- b , iv)-c

10. Describe the orbital with following quantum numbers i) $n=3, l=2$ ii) $n=4, l=3$

- (a) i) 3p, ii) 4f (b) i) 3d , ii) 4d (c) i) 3f , ii) 4f (d) i) 3d , ii) 4f

PART-II

ANSWER THE FOLLOWING ANY FOUR QUESTIONS.

4 X 2 = 8

11. How many orbitals are possible for $n=4$?
 12. What is exchange energy ?
 13. Define orbital. What are the n and l values for $3p_x$ and $4dx^2-y^2$ electron ?
 14. Calculate the total number of angular nodes and radial nodes present in $3d$ and $4f$ orbitals.
 15. Give the electronic configuration of Mn^{2+} and Cr^{3+}
 16. State Heisenber's Uncertainty Principle

PART-III

ANSWER THE FOLLOWING ANY FOUR QUESTIONS.

4 X 3 = 12

(COMPULSORY QUESTION NO : 22)

17. State Aufbau principle
 18. Write the stable electronic configuration of copper and chromium
 19. Write the de-broglie equation.
 20. state and explain pauli's exclusion principle
 21. Describe the hund's rule with suitable example .
 22. How many unpaired electrons are present in the ground state of Fe^{3+} ($Z=26$),
 Mn^{2+} ($z=25$)

PART-IV

ANSWER ALL THE QUESTION

2 X 5 = 10

23. a) Write short note on :
 i) Magnetic Quantum Number ($2 \frac{1}{2}$)
 ii) Azimuthal Quantum Number ($2 \frac{1}{2}$)
 (OR)
 b) Explain briefly the time independent schrodinger wave equation (5)
24. a) Write the assumptions of Bohr atom model(5)
 (OR)
 b) i) Write short note on spin quantum number. ($2 \frac{1}{2}$)
 ii) Write short notes on Principal Quantum Number ($2 \frac{1}{2}$)

S. manikandan 7708543401