Quadrant IV – Assessment (Module – wise)

Programme: Bachelor of Science (Third Year)

Subject: Chemistry

Paper Code: CHC 105

Paper Title: Physical Chemistry

Unit: II

Module Name: Probability distribution functions, nodal properties.

Module No: 32

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MCQ

- 1. Numbers of nodes present in 3s and 4p orbital are _____.
 - a. 2,3 respectively
 - b. 2,2 respectively
 - c. 3,2 respectively
 - d. None of the above.
- 2. The radial part of wave function depends on quantum numbers: _____
 - a. n, l
 - b. n only
 - c.l,m
 - d. I only
- 3. The number of nodes in the radial probability distribution curve of
 - s Orbital of any energy level is equal to: _____
 - a. n/2
 - b. n-1
 - c. n-2
 - d. n-l-1

Completion type (fill-in-the-blanks)

- 1. The angular part of wave function depends on quantum numbers: _____
- The distance of highest peak in Radial probability distribution curves gives ______.

3. _____ gives size of the orbital.

4. _____ gives shapes of the orbital.

Short Answer – I (short notes - say 20 to 50 words)

- 1. What are radial wave functions?
- 2. What are angular wave functions?
- 3. Define node.
- 4. Explain radial probability.

Short Answer – II (extended – say 50 to 100 words)

- 1. Draw probability distribution curves for 1s, 2s, 3s, 2p, 3p, 4p orbitals.
- Draw and explain radial probability distribution curves for 1s, 2s, 3s, 2p, 3p, 4p orbitals.
- 3. Draw shapes of 2s, 3s, $4p_x$, $4p_y$, 3d, 5d orbitals. And show nodes in each orbital.
- 4. What are probability distribution curves? What are their shortcomings? How is it overcome by radial probability distribution curves?