



Q.1. Give short answers of the following:

(15x2=30)

1. Write down the main characteristics of Beta - β - particles.
2. Differentiate between chemical reactions and nuclear reactions with examples.
3. What is artificial radioactivity?
4. Briefly explain the term Mass Defect?
5. What do you know about uncertainty principle?
6. How principle quantum number is denoted and what information it carries?
7. What is Hund's rule?
8. Under what conditions gases behave non-ideal?
9. What do you know about mean free path of gas molecules?
10. Define critical temperature of gases.
11. What is the difference between covalent and coordinate covalent bond?
12. Compare properties of sigma and pi bonds.
13. Give one example of ortho and meta directing groups.
14. What is modern periodic law and how it is different from Mendeleev's periodic law?
15. Draw the resonance structures of nitrobenzene.

Q.2. Answer the following questions.

(6x5=30)

1. Describe Davison and Germer's experiment for verification of wave nature of electron.
2. Explain various series in hydrogen spectrum.
3. What are isotopes and isobars? Describe your answer with suitable examples.
4. In methane, ammonia and water what are bond angles, explain why they are different despite of same type of hybridization?
5. Starting from kinetic molecular theory, derive an expression for calculating kinetic gas equation.
6. What is periodicity of properties, briefly discuss, ionization potential and atomic radius in groups and periods.