

T.M. JACOB MEMORIAL GOVT. COLLEGE MANIMALAKUNNU

B.Sc. DEGREE (CBCSS) INTERNAL EXAMINATION, OCTOBER 2017

Semester I

Complementary Course – CHEMISTRY – BASIC THEORETICAL AND ANALYTICAL CHEMISTRY

Time: Two hours

Maximum Marks: 40

Part A

(Answer all questions, Each question carries 1 mark)(6×1=6marks)

1. What is Hund's rule of maximum multiplicity?
2. State modern periodic law
3. State Aufbau principle?
4. Why cations are smaller than their parent atom?
5. Explain the mole concept?
6. Define lattice energy?

Part B

(Answer any five questions. Each question carries 2 marks)(5×2=10marks)

7. Distinguish between orbit and orbital?
8. How does ionization energy vary along a period?
9. What is Heisenbergs Uncertainty Principle?
10. What is electron affinity? How does electron affinity vary down a group?
11. Distinguish between covalent radius and ionic radius?
12. Explain the different postulates of VSEPR theory?

Part C

(Answer any three questions. Each question carries 4 marks)(3×4=12marks)

13. Define Ionic bond? Explain the factors which favour the formation of ionic compounds?
14. Explain the laws of Photoelectric effect?
15. State Pauli's exclusion principle? Based on the principle show that the maximum number of electrons that can be accommodated in an orbital is 8 when $n=2$.
16. What is de Broglie wavelength? Calculate the wavelength associated with a bullet of mass 1g travelling with a velocity of $3 \times 10^2 \text{ ms}^{-1}$

Part D

(Answer any one question and it carries 12 marks)(12×1=12marks)

17. What are quantum numbers? Explain the significance of each?
18. Explain the different methods of expressing concentration?