

B.Sc. B.Ed SEM-I Examination: 2019

Course-CC01

Subject: Chemistry

Time: 2 Hours

F.M. 50

Answer any *ten* questions

(5 × 10 = 50)

1. What are the defects of Bohr's theory of atomic structure? How did Sommer Field theory rectify it? (3+2)
2. Show the electron distribution of Nickel (At. No. 28) and Zinc (At. No. 30). (2 ½ + 2 ½)
3. Write Hund's rule, Pauli's exclusion principle and Auhbau principle. (2+2+1)
4. Write Mendeleev's periodic law. Why atomic radii decreases when we move from left to right of second period of the periodic table? (2+3)
5. What is electronegativity? If electronegativity of fluorine is 4.0 on Pauling scale, then what is the value of it on Mulliken's scale? (1+4)
6. Though the central atom of NH₃ and H₂O molecules are SP³ hybridised, the bond angle of H-N-H is greater than that of H-O-H. Why? 5
7. What do you mean by H-bonding? Although Nitrogen and Chlorine have nearly same electronegativity, yet Nitrogen forms H-bonding but Chlorine does not. Why? (2+3)
8. Write the structure of the following compounds (1×5 = 5)
 - (i) 2-chloro -3methyl pentane
 - (ii) 1-chloro-4-ethyl cyclohexane
 - (iii) 4-tert butyl -3-iodo heptane
 - (iv) 1, 4 di-bromobut-2-ene
 - (v) 1-bromo-4sec butyl-2-diethyl benzene
9. Explain why:
 - (i) The dipole moment of chloro benzene is lower than that of cyclo hexyl chloride.
 - (ii) Grignard reagent should be prepared under anhydrous condition. (2 ½ + 2 ½)
10. What happens when
 - (i) N-butyl chloride is treated with alcoholic KOH
 - (ii) Methyl chloride is treated with KCN (2 ½ + 2 ½)
11. What is conformational isomer? Draw the conformer of ethane in sawhorse and Newman projection. (1+4)
12. Explain why:
 - (i) Acetylene is more acidic than ethylene.
 - (ii) Compare the basicity of aniline and ammonia. (2 ½ + 2 ½)