

BSC. PART - II EXAMINATION - 2017

CHEMISTRY SUB/GEN

Answer six questions in all, selecting at least one from each Group in which Q.No.1 is compulsory.

1. Choose the correct answer of the following :
- (a) Which alkali metal can be used in photoelectric cells?
(i) K (ii) Li (iii) Na (iv) Cs
- (b) The maximum covalency exhibited by fluorine is :
(i) 1 (ii) 3 (iii) 5 (iv) 7
- (c) The energy of the sun arises from
(i) Fission reaction (ii) Fusion reaction
(iii) Radioactive reaction (iv) Chemical exothermic reaction
- (d) The equivalent weight of KMnO_4 in acidic medium is
(i) $\frac{\text{Mol. weight}}{2}$ (ii) $\frac{\text{Mol. weight}}{3}$ (iii) $\frac{\text{Mol. weight}}{5}$ (iv) None of these
- (e) If the rate of reaction is equal to the rate constant, the order of the reaction is :
(i) 0 (ii) 1 (iii) 2 (iv) 3
- (f) Which of the following is used in Cancer therapy ?
(i) Ni (ii) Co (iii) Rn (iv) Po
- (g) Which of the following does not contain material particles ?
(i) α -rays (ii) β -rays (iii) γ -rays (iv) Canal rays
- (h) The isomer have the same :
(i) Chemical properties (ii) Structural formula
(iii) Molecular formula (iv) Physical properties
- (i) Carbamide is another name for :
(i) Urea (ii) Acetamide (iii) Formamide (iv) Biuret
- (j) Which of the following is involved in Sandmeyer's reaction ?
(i) Ferrous salt (ii) Diazonium salt (iii) Ammonium salt (iv) Cuprammonium salt

GROUP - A

2. (a) What is meant by rate of reaction? Explain the factors which affect the rate of a reaction.
(b) Derive an expression for the rate constant of a second order reaction involving two reactants with same concentrations.
3. (a) State and explain Lewis theory and Lowry Bronsted theory of acids and bases. In what way Lewis acid differs from Bronsted acid?
(b) Calculate the pH of 0.001 N HCl assuming complete ionization of HCl.
4. (a) Deduce Ostwald's dilution law and discuss its limitations:
(b) Formic acid is 4.5% dissociated in a 0.1N solution at 20°C. Calculate the dissociation constant of the acid.
5. Write short notes on any two of the following :
(a) Activation energy (b) Common ion effect
(c) Radio carbon dating (d) Kohlrausch's Law

GROUP - B

6. (a) Name the two important ores of Nickel. How is Nickel extracted from its important ores ?
(b) Name two important alloys of Nickel.
7. (a) What are the important ores of vanadium ? How is vanadium extracted from its ore ?
(b) What are the various oxidation states of vanadium ?
8. (a) Describe a method for the separation of noble gases from air.
(b) Why is inert gas monoatomic ?
9. Write short notes on any two of the following :
(i) Hydroxylamine (ii) Ionization potential (iii) Sodium thiosulphate
(iv) Caro's acid

GROUP - C

10. (a) How is lactic acid isolated from molasses ?
(b) How does lactic acid reacts with :
(i) Conc. H_2SO_4 (ii) $KMnO_4$ (iii) $I_2 + NaOH$
11. (a) Describe the preparation of pure aniline from nitrobenzene.
(b) How is phenol obtained from aniline ?
12. (a) How is benzene diazonium chloride prepared ?
(b) How will you obtain the following compounds starting from benzene diazonium chloride ? (i) Benzene (ii) Benzoic (iii) Phenol (iv) Nitrobenzene
13. Write notes on any two of the following :
(i) Reimer-Tieman reaction (ii) Tautomerism (iii) Structural isomerism
(iv) Cannizzaro reaction