Q.P. Code : 00233

[Time: Three Hours]   [Marks:80]

Please check whether you have got the right question paper.

N.B: 1.   All questions are compulsory.
        2.   Answer all sub questions together.
        3.   Figures to right indicate full marks.

Q.1	a)	**Explain the terms (Any 5)**

Explain the terms (Any 5)   5
i) Heterogeneous catalyst   ii) Atomic orbital
iii) Milliequivalence   iv) Antidote
v) Molecularity of reaction   vi) Protein precipitant

b)   **Answer the following (Any 5)**   10
i)   Define: Buffer, Buffer capacity.
ii)   Draw Lewis structure for SF_6 and state hybridization of central atom
iii) State the uses and examples of expectorants
iv)   Give examples of combination antacids. State their advantages
v)   Explain role of molybdenum as essential and trace element
vi)   Classify and state use: Mohruate sodium, magnesium trisilicate

c)   **Match the following**   5

	Column A	**Column** B
i)	Antimony potassium tartarate	Metal ion catalysis
ii)	Rontgen	Chelating agent
iii)	RMgBr	Tetrahedral
iv)	CCl_4	Radioactivity
v)	Dimercaprol	Emesis

Q.2   a) i) **Complete the following sentences**   2
1)   Isotope effect $k_H/k_D >1$ is called as…………and $k_H/k_D < 1$ is known by………………
2)   Isotope effect is maximum for …………………element
3)   Isotope effect is used for determining ………………of reaction

ii)   What is a secondary isotope effect? Explain with an example   2

b)   **Answer the following (Any 2)**   4
i)   Enlist any four official antioxidants and explain their use
ii)   Explain use of Sclerosing agent and state example for the same
iii) Add a note on zinc preparations as topical agents
c)   Define any two units for measurement of absorbed dose of radioactivity   2
d)   Elaborate physiological role of phosphate ion   2

Q.P. Code : 00233

Q.3 a) i) Draw an energy profile diagram for catalysed and uncatalyzed reaction   2
       ii) Explain phase transfer catalysis mechanism and example   2
     b) i) What is achlorhydria? How it is treated?
       ii) Comment on how action of sodium carbonate differs from aluminium hydroxide as an   2
            antacid
     c)   By taking example show how to locate an electron in an atom by using all four quantum   2
          numbers
     d)   Calculate the formal charge on nitrogen and double bonded oxygen   2
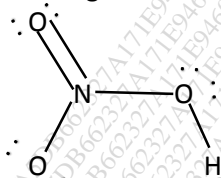
Q.4 a) **Complete the following table on the basis of hybridization concept**   4

Molecule	Hybridization state of the underlined atom	Bond angle
$\underline{S}Cl_6$		
$\underline{N}H3$		
$\underline{B}F3$		
$\underline{C}$ in acetylene		

     b) Elaborate on mechanism of actions for antimicrobials. Also give one example of agent   4
         showing protein precipitant and astringent action
     c) Explain with suitable example kinetic and themodynamic control on reaction   2
     d) 'If a reagent is reactive it is less selective'- Explain   2

Q.5 a) **State true or false**   4
     i)   Aufbau principle governs filling of electrons in an atom
     ii) Electron affinity is same as electronegativity for any element
     iii) Dipole moment for carbon tetrachloride is less than chloroform
     iv) Bond angle for H_2O is 90^0 by hybridization theory

     b) What is a general acid? Derive an expression for general acid catalysis   4
     c) Give uses and mechanism action for EDTA and penicillamine   2
     d) What are pharmaceutical buffers? How they are different than physiological buffers? Give   2
         one example of each
Q.6   **Answer the following (Any 6)**   12

Q.P. Code : 00233

i) 'For a first order reaction the half-life does not depend upon initial concentration of reactant'- Justify the statement

ii) Explain uses radioactive gold-198 and Cr-51

iii) State and explain principle of microscopic reversibility

Iv) What is the weight of $CaCl_2.2H_2O$ needed to prepare a liter of solution containing 9 mEq Ca^{+2}/ l

v) Explain the role of zinc as essential and trace elements

vi) Add a note on radiation dosimetry

vii) What do you mean by intracellular and extracellular ions? What is their significance?