Q.P. Code : 00234

[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) (05)

(i) Radioactivity ii) Quantum number
(iii) Systemic antacid iv) Chelating agent
(v) Reaction order vi) Turnover number

(b) **Answer the following (Any 5)** (10)

(i) Explain phase transfer catalysis in brief
(ii) Draw Lewis structure for $PC1_5$ and state hybridization of central atom
(iii) State the uses and examples of expectorants
(iv) What are physiological functions of magnesium?
(v) Define: Hematinics. Discus anyone example for same in brief
(vi) With suitable examples explain use of saline cathartics (05)

(c) **Match the following**

Column A	Column B
Reaction coordinates	Electrophilic catalysis
Protective	Essential and trace element
$AlC1_3$	Linear geometry
Acetylene	Energy profile diagram
Zinc	Talc

Q. 2 (a) Discuss primary isotope effect. State any one application for it (04)

(b) **Answer the following (Any** 2) (04)

(i) Give the use and mechanism of action for: Potasium permanganate and silver nitrate
(ii) State and explain significance of emetics as inorganic pharmaceutical agent
(iii) Enlist any four desirable properties of inorganic antioxidants and state any two examples for the same

(c) Give an account of radioactive iodine compounds and their use in medicine (02)

(d) Define: Milliequivalence. Calculate the number of mEq of KCl in one liter of 1 % w/v solution (02)

Q. 3 (a) (i) Classify the various types of catalysis and state class for RMgBr (02)
(ii) Add a note on electrophilic catalysis (02)

(b) (i) What are acidifying agents? Give their significance (02)
(ii) Explain uses of bismuth subnitrate and kaolin (02)

(c) Define: Polar covalent bond, electronic configuration (02)

(d) Calculate the formal charge on central atom (Any 2) (02)

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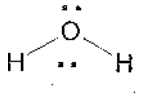

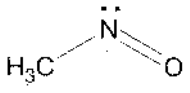

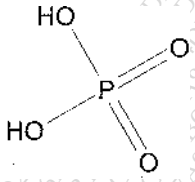

Q. 4 (a) Complete the following table on the basis of hybridization concept (04)

Molecule	Hybridization state of the underlined atom	Molecular shape
$\underline{S}F_6$		
$\underline{N}F_3$		
$H_2\underline{0}$		
$\underline{C}$ in Ethylene		

(b) Give a detail account of antimicrobials and astringent products used as topical agents. Support your answer with suitable examples (04)

(c) State and explain reactivity and selectivity principle (02)

(d) Sulfonation of naphthalene at 80°C gives naphthalene-1-sulfonic acid and at 160°C gives naphthalene-2-sulfonic acid'- Explain clearly principle behind the reaction (02)

Q. 5 (a) **State true or false** (04)

(i) d-Orbitals have dumbell shape

(ii) Group electronegativity for methyl group is less than nitro group

(iii) In electrostatic potential surface diagram blue colour signify electropositive groups

(iv) Bond angle for BF_3 is 180° by hybridization theory

(b) What is a specific base? Derive an expression for specific base catalysis (04)

(c) Classify antidotes with suitable examples. Give its significance in cyanide poisoning (02)

(d) What are physiological buffers? With any one suitable example explain their use in overall acid-base balance (02)

Q. 6 **Answer the following (Any 6)** (12)

(i) In a certain first order reaction 20 % of the reaction gets completed in 10 minutes. Calculate the half life for the same

(ii) State the radioisotope used for pernicious anemia. How it acts?

(iii) State and explain principle of microscopic reversibility

(iv) How would you convert 37MBq into millicurie and dpi (disintergration per seconds)

(v) Explain the role of selenium and sulfur as essential and trace elemnts.

(vi) Give the advantages of using combination antacids with one example of such combination.

(vii) Enlist essential physiologic electrolytes. Explain the need behind electrolyte replacement therapy.

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