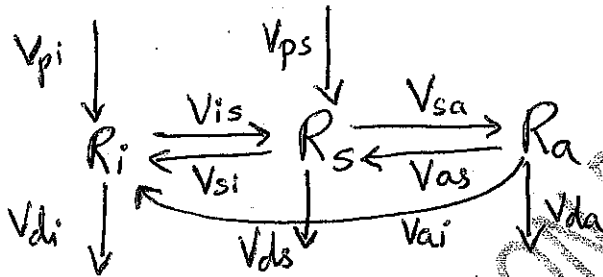


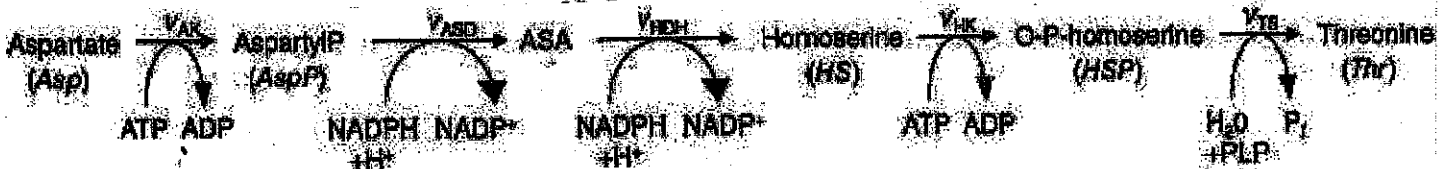
Note: All questions are compulsory. Carrying mobile phone during examinations will be treated as a case of unfair means.

Q1. How is chemotaxis viewed as part of signal transduction pathways? Explain the pathway of chemotactic response in bacteria with the help of a diagram. What is a scatchard plot and how will the scatchard plot will be for a typical chemotaxis response? **5 Marks (CO III)**

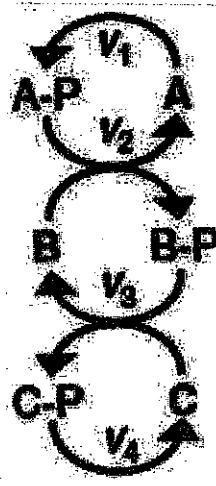
Q2. For the following reactions write the differential equations and stoichiometric matrix. **3x2=6 Marks (CO III and IV)**



3x2=6 Marks (CO III and IV)



Q3. What is this pathway representative of? Explain with examples the importance of such pathways. **3 Marks (CO IV and V)**



Q4. What are the levels of abstraction in metabolic network? What are the different layers of information required in genome scale metabolic network reconstruction?

5 Marks (CO IV)

Q5. Describe the following briefly:

2x5=10 Marks (CO IV and V)

- a. Flux cone
- b. Constraint based modeling
- c. Amplification in signal transduction
- d. Bipartite graph
- e. GPCR

Q6. For the following pathway, draw the reaction as two graphs, one with respect to reactants and another with respect to reactions. What is the name of this pathway? Write the differential equations and the stoichiometric matrix for these reactions.

6 Marks (CO V)

