



[Time: 3 Hours]

[Max. Marks: 75]

**Pharmaceutical Process Chemistry**

**Q.P. CODE: 5160**

Your answers should be specific to the questions asked.

Draw neat, labeled diagrams wherever necessary.

**LONG ESSAY (Answer any Three)**

**3 X 10 = 30 Marks**

1. What are the various stages of scale up process? Discuss large scale process in detail.
2. Define clarification? Discuss various theories of filtration. Enumerate factors affecting filtration.
3. Explain aerobic fermentation? Write a note on production of Vitamins.
4. What are the various integral components of MSDS (Material Safety Data Sheet)? Discuss Personal Protective Equipment (PPE).

**SHORT ESSAY (Answer any Nine)**

**9 X 5 = 45 Marks**

5. Discuss the various sources of impurities of API.
6. Discuss the various factors affecting crystallization.
7. Write in detail on kinetics and mechanism of aromatic nitration.
8. Write a note on In-Process control.
9. Explain azeotropic distillation.
10. Discuss liquid phase oxidation with respect to oxidizing agents.
11. Write a note on catalytic halogenations.
12. Explain various approaches for streamlining reaction steps.
13. Discuss catalytic hydrogenation. What are its limitations?
14. Write a note on effluent management.

\* \* \* \* \*