

**UKA TARSADIA UNIVERSITY**  
B.Pharm. (2nd Semester)  
**Subject : 030020201 - Unit Operation**

**Duration: 3 Hours**

**Max. Marks: 70.**

**Instructions:**

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.
5. Draw diagrams/figures whenever necessary.

**Section-1**

**Q-1 (A) Do as directed:**

**[07]**

- I) Name the principle behind the operation of hammer mill and cutter mill.
- II) Define size separation.
- III) Name the disadvantages associated with size reduction.
- IV) Define elutriation.
- V) What is molecular diffusion in liquid mixing?
- VI) Which type of mixer is suitable for the preparation of emulsion?
- VII) What is the meaning of colour code Red for piping system?

**Q-1 (B) Answer the following in brief: (Any 4)**

**[08]**

- I) Differentiate the mechanisms, compression and attrition in size reduction.
- II) List the methods of sieve analysis used for testing of powders.
- III) Classify liquids based on their miscibility and give one example in each.
- IV) Write the steps involved in solid-solid mixing operation.
- V) Mention the basic elements of pneumatic conveyor.
- VI) Differentiate between bins and silos.

**Q-2 Answer the following:**

**[10]**

- A) Explain the principle and construction of cyclone separator with neat labeled diagram.

OR

- A) Explain with the help of diagram the construction and working of ball mill.  
B) What are the reasons behind the vortex formation. Give the solution to prevent it?

OR

- B) Write the difference between reciprocating and centrifugal pump.

**Q-3 Answer the following in detail. (Any 2)**

**[10]**

- A) Classify equipments for solid mixing and explain principle, working and advantages of Sigma blade mixture.

- B) Name the devices used for solid transportation and discuss the belt conveyor system.
- C) Explain the factors related to selection of suitable mill for size reduction operation.

### **Section-2**

**Q-4 (A) Do as directed:** **[07]**

- I) Define hazard.
- II) Define polymorphs.
- III) What is dew point?
- IV) Name the crystallizer suitable for thermolabile substances.
- V) Define dehumidification.
- VI) Foam extinguisher is used to control which class of fire?
- VII) What kind of powder property is related to Hausner ratio?

**Q-4 (B) Answer the following in brief: (Any 4)** **[08]**

- I) Name the factors affecting packing geometry of particles.
- II) Name the different types of crystal habits.
- III) Name the types of corrosion.
- IV) Difference between dry bulb and wet bulb temperature.
- V) Give any four reasons for using stainless steel as material of construction.
- VI) List any two characteristics each of crystalline and amorphous solid.

**Q-5 Answer the following:** **[10]**

- A) Discuss in brief the various means of improving the flow property of powders.

OR

- A) Write a note on utility of various types of glass in pharmaceutical industry.
- B) Give a brief note on factor influencing corrosion.

OR

- B) Define humidity and explain its application and mechanism.

**Q-6 Answer the following in detail. (Any 2)** **[10]**

- A) Discuss the concept of Mier's supersaturation theory and explain its limitation.
- B) Write a detail note on electrical hazards explaining its source and preventive measures.
- C) Write a note on prevention and control of corrosion.