

**Ph.D Course Work Examinations, July-2023**

**MINERAL PROCESSING**

**Course-IV: Mineral Processing and Metallurgical Unit Processing**

**Time: 3 Hours**

**Max. Marks: 70**

**Instruction: Answer all Section**

**SECTION-A**

**I. Answer the following. 2X10=20**

- a) Define mineral beneficiation.
- b) Write the mathematical expression to calculate the recovery.
- c) List Primary, Secondary and Tertiary crushers.
- d) Define sub sieve analysis.
- e) Write down the formula to determine concentration criteria.
- f) Define Pinning factor and Lifting factor.
- g) Define Skin flotation.
- h) List any four collectors.
- i) What are the steps involved in the formation of pellets.
- j) Define COREX gas.

**SECTION-B**

**II. Answer any four of the following. 4X5=20**

1. Explain Bond's crushing law.
2. What do you mean by partition curve and how they are plotted?
3. Explain theory of jigging with neat sketch.
4. Explain HRT (High Rate Thickener) with neat sketch
5. Write a note on Flocculation
6. Write the importance of Pilot Scale testing

**SECTION-C**

**III. Answer any three of the following. 3X10=30**

7. What do you mean by Washability index? How to draw Washability curves.
8. With neat sketch explain column flotation.
9. Explain the working principle of Wet High Intensity Magnetic separators with its importance in mineral beneficiation
10. With relevant case study explain the Classification of collectors used in flotation.