

# GOVERNMENT POLYTECHNIC JAJPUR

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## DEPARTMENT OF METALLURGICAL ENGINEERING

### LESSON PLAN

|                                      |                                  |   |
|--------------------------------------|----------------------------------|---|
| Discipline<br><b>Metallurgy</b>      | Semester <b>3RD</b>              | Name of teaching faculty: <b>Suwendu Muduli</b> (Lecturer in Metallurgy)                                  |
| Subject<br><b>Mineral processing</b> | <b>No day/<br/>week class: 4</b> | SEMESTER FROM <b>01.08.2023</b> to <b>30.11.2023</b><br><b>No of week: 16</b> <b>Session: Winter 2023</b> |
| <b>Week</b>                          | <b>Class Day</b>                 | <b>Topic</b>  |
| 1st                                  | 1st                              | Introduction to mineral dressing  |
|                                      | 2nd                              | Mineral resources of india  |
|                                      | 3rd                              | Unit operation- ore dressing  |
|                                      | 4th                              | Comparision of mineral and ore  |
| 2nd                                  | 1st                              | Comminution method  |
|                                      | 2nd                              | Liberation method   |
|                                      | 3rd                              | Physical and chemical property of ore   |
|                                      | 4th                              | Types of crushing methods   |
| 3rd                                  | 1st                              | Discuss jaw crusher- Blake type   |
|                                      | 2nd                              | Discuss jaw crusher- Dodge type   |
|                                      | 3rd                              | Discuss gyratory crusher  |
|                                      | 4th                              | Discuss roll crusher  |
| 4th                                  | 1st                              | Find angle of nip, Reduction ratio  |
|                                      | 2nd                              | Compare jaw and gyratory crusher  |
|                                      | 3rd                              | Compare blake and dodge crusher   |
|                                      | 4th                              | Different grinding methods  |
| 5th                                  | 1st                              | Discuss ball mill operation   |
|                                      | 2nd                              | Rod mill and tube mill  |
|                                      | 3rd                              | Theory of ball mill operation   |
|                                      | 4th                              | Open ckt and close ckt grinding   |
|                                      | 1st                              | Compare dry and wet grinding  |
|                                      | 2nd                              | Derive critical speed of ball mill  |

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|------|-----|---|
| 6th  | 2nd |   |
|      | 3rd | Factors affecting ball mill                 |
|      | 4th | <b>Class test-1 m.c.q type</b>              |
| 7th  | 1st | Lab sizing method                           |
|      | 2nd | Ro-tap sieve shaker                         |
|      | 3rd | Calculate mesh size mesh number             |
|      | 4th | Discuss grizzly screen                      |
| 8th  | 1st | Discuss trommel screen                      |
|      | 2nd | Explain shaking screen                      |
|      | 3rd | Expalin vibrating screen                    |
|      | 4th | Revision of old chapter                     |
| 9th  | 1st | <b>First I.A test</b>                       |
|      | 2nd | Capacity and efficiency of screens          |
|      | 3rd | Principles of classifier                    |
|      | 4th | Dsicuss evan classifier                     |
| 10th | 1st | Compare lab sizing and industrial screening |
|      | 2nd | Gravity concentration method                |
|      | 3rd | Dsicuss flowing flim method                 |
|      | 4th | Explain wilfley table                       |
| 11th | 1st | Principle of jigging                        |
|      | 2nd | Factors affecting stratification            |
|      | 3rd | Discuss baum jig                            |
|      | 4th | Discuss harz jig                            |
| 12th | 1st | Different jigs and working method           |
|      | 2nd | Revisision of old chapter                   |
|      | 3rd | <b>Class test-2 m.c.q type</b>              |
|      | 4th | Heavy media separation method               |
| 13th | 1st | Principles of H.M.S                         |
|      | 2nd | Discuss lessing process                     |
|      | 3rd | Discuss du-pont process                     |
|      | 4th | Discuss bertrand process                    |
| 14th | 1st | Explain chance process                      |
|      | 2nd | Principle of froth flotation                |
|      | 3rd | Compare skin and froth flotation            |

|      |                        |                                      |
|------|------------------------|--------------------------------------|
|      | 4th                    | Dicuss treagent of flotation         |
| 15th | 1st                    | Contruction of flotation cell        |
|      | 2nd                    | Examples of reagents and function    |
|      | 3rd                    | Principle of electrostatic separator |
|      |                        | Dicuss huffs separator               |
| 4th  | Columbs law derivation |                                      |
| 16th | 1st                    | Magnetic separator operation         |
|      | 2nd                    | Principle of ball-norton separator   |
|      |                        |                                      |
|      | 3rd                    | Revision of old chapter              |
| 4th  | <b>Second I.A test</b> |                                      |