No. of Printed Pages : **2**

21MNP3C9L

Sl. No.

M.Tech. III Semester Degree Examination, April/May - 2024

MINERAL PROCESSING

Magnetic and Electrostatic Separation Technology

(NEP)

Time : 3 Hours Maximum Marks : 70

Note : *Answer* ***any five*** *of the following questions with question* ***No. 4 Compulsory****.*

1. (a) What are the different forces acting on a particle in magnetic separation ? **6**

(b) Describe the different types of wet low intensity drum magnetic separators and their duty specifications. **8**

2. (a) Describe different methods of electrification/charging of mineral particles. **8**

(b) Describe briefly the electrostatic high tension separation used to separate conducting and non conducting heavy minerals. **6**

3. (a) Write a note on mechanism of flocculation. **6**

(b) Give an example each for nonionic, anionic and cationic flocculants used in mineral processing. **4**

(c) Write in brief the selective flocculation process. **4**

4. Describe the Flowsheet of processing a fine grained siliceous magnetite ore assaying 36% Fe, 2 at-0.1 mm MOG using WLIDMS in Rougher, Scavenger and Cleaner stages with dewatering of products by thickener and filter. Producing concentrate assaying 64.8% Fe, 10% moisture and tails assaying 7.2% Fe 10% moisture. **14**

5. (a) State Coe and Clevenger equation for Thickening. State Kynch theorem and Derive Kynch based equation for Thickening. **10**

(b) Write a note on vacuum disc filter. **4**

6. (a) Write a note of dewatering using hydro cyclone, dewatering screen and thickener to produce cakes. **6**

(b) Describe downstream and upstream methods of tailing dam construction with merits and demerits. **8**

P.T.O.

7. Write short notes on the following :

(a) Lamella thickener **7**

(b) Rare earth permanent magnet based belt drum separator **7**

8. (a) What is Canister ? What are the different types of matrix used in Magnetic separators ? **7**

(b) Describe Counter current and co-current magnetic separators with necessary diagrams. **7**

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