

21MNP1C3L**M.Tech. I Semester Degree Examination, April/May - 2023****MINERAL PROCESSING****Analysis of Ores and Minerals**

Time : 3 Hours

Maximum Marks : 70

Note : Answer **any five** of the following with Question No. 1 (Q.1) **compulsory**. Each question carries **equal** marks.

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| 1. | (a) | Explain accuracy and precision with example. | 4 |
| | (b) | What is the principle involved in ion exchange separation mechanism ? | 5 |
| | (c) | Briefly explain chromatography. | 5 |
| 2. | (a) | Discuss the theory of redox titration with suitable example. | 4 |
| | (b) | Explain the theory involved in Gravimetric titration. | 5 |
| | (c) | Write a note on digestion of precipitate. | 5 |
| 3. | (a) | Write down the principle of electro gravimetric analysis. | 4 |
| | (b) | List out the application of fire assaying in analysis of metals. | 5 |
| | (c) | Discuss theory of Proximate analysis. | 5 |
| 4. | (a) | Write the principle involved in flame emission spectroscopy. | 4 |
| | (b) | Discuss the instrumentation of atomic absorption spectroscopy. | 5 |
| | (c) | List out the applications of colorimeter. | 5 |
| 5. | (a) | Write the principle involved in the atomic absorption Spectroscopy. | 4 |
| | (b) | Write principle involved in the spectro photometry. | 5 |
| | (c) | Discuss the DTA curve of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$. | 5 |
| 6. | (a) | Write the principle involved in the differential thermal analysis. | 4 |
| | (b) | Discuss the theory of thermogravimetric analysis. | 5 |
| | (c) | State Bragg's law and explain the principle of X-ray of diffraction. | 5 |
| 7. | (a) | Explain the importance of R-V Lines in qualitative analysis. | 5 |
| | (b) | Describe the instrumentation and working of electron microprobe. | 5 |
| | (c) | How limestone ore is analyzed ? | 4 |
| 8. | (a) | Discuss the theory of X-ray florescence. | 5 |
| | (b) | Explain with an example how spectrophotometric method can be used for quantitative analysis. | 4 |
| | (c) | Discuss the theory of Electron microprobe analyser. | 5 |