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21MNP5C14L

Sl. No.

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

MINERAL PROCESSING

Agglomeration Techniques

(NEP)

Time : 3 Hours Maximum Marks : 70

***Note** : (i) Answer **any five** of the following questions.*
*(ii) Each question carries **equal** marks.*
*(iii) question number **1** is **compulsory**.*

1. (a) What are the main types of agglomeration techniques, and how do they differ in their principles and applications ? **8**
(b) Describe different types of binders & additives used in pelletization and their properties. **6**

2. (a) How do factors such as moisture content, particle size distribution, and binder type affect green-ball formation ? **8**
(b) What is the significance of the swelling index test in pellet quality assessment ? **6**

3. (a) Compare the Disc and Drum pelletiser. **8**
(b) Describe with a neat figure the shaft kiln used for firing of pellets. **6**

4. Draw a schematic diagram of Dwight-Lloyd sintering machine. Explain the charge mix and types of bonds formed during the sintering. **14**

5. (a) What is the importance of proportioning raw materials in the sintering process ? **4**
(b) Describe the cooling and screening processes used in sinter plants. **4**
(c) What are the main objectives of using agglomerates in the blast furnace ? **6**

6. (a) Briefly describe the compressive strength and porosity test for iron ore lumps-aggregates. **6**
(b) Discuss the various variables which affects the rate of production of balls. **8**

7. (a) What are the different types of briquetting machines and their applications ? **8**
(b) Describe with a neat figure the Grate kiln used for firing of pellets. **6**

8. (a) Describe with flow sheet the iron ore pellet plant with relevant process details. **8**
(b) What is the role of moisture during sintering and pelletisation ? **6**

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