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22/11/2023 (79)

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Roll no.:

NATIONAL INSTITUTE OF TECHNOLOGY, HAMIRPUR, H.P.

Department of Material science and Engineering

End-Term Examinations (2023-24)

Iron and Steel making (MS-313)

Duration: 3 hours

Maximum Marks: 50

Attempt all the questions. Explain with suitable diagram wherever necessary.

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- Q1: What is the major difference between Direction reduction, smelting reduction and direct molten steel making? [4]
- Q2: Explain the BF-BOF route using a schematic? [4]
- Q3: What is the difference between direct and indirect reduction in the blast furnace? [4]
- Q4: Explain the different reaction processes in different zones of the blast furnace [4]
- Q5: How total oxygen atoms to silicon atoms effect its structure in terms of bonding [4]
- Q6: What are the basic thermodynamics involved in the phosphorous removal in BF [4]
- Q7: Explain the kinetics of decarburization and slopping in LD process [6]
- Q8: Explain the charging sequence and emulsion formation in LD process? What are the advantages of forming an emulsion in LD process [6]
- Q9: Name and explain different types of slag practices in steel making [4]
- Q10: What are the advantages of hybrid LD processes [2]
- Q11: a) What are the different elements used in the secondary steel making and what is the importance of these elements in the secondary steel making [4]
- Q12: How CaCO_3 is useful in steel making and why we cannot use CaCO_3 powder from top charging method? How CaCO_3 powder can be charged in the secondary steel making [4]