

238515(38)

Diploma in Engg. (Fifth Semester) Examination

May/June, 2009

(Metallurgy Engg. Branch)

SECONDARY STEEL MAKING

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : (i) Attempt all five questions. Internal choice is given in each question.

(ii) Answer the questions in English only.

(iii) Give appropriate figure, graph & data wherever needed.

(a) Discuss the limitations of primary steel making processes & the emergence of secondary steel making.

10

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Classify the NMI's from their sources & discuss the approach to minimise NMI's in steel.

10

Or

How NMI's are characterised? Discuss the effect of inclusion morphology on steel.

10

Describe the powder injection technology & comments upon stirring, desupphurisation & deoxidation in it.

10

(b) Distinguish the two terms "total oxygen" & "dissolved oxygen". How total oxygen can be brought down?

10

Or

Describe different methods of stirring & the purpose of stirring.

(a) LRF has revolutionised the total steel making scenario. Comments upon it.

10

(b) Describe the method of production of stainless steel through AOD. Compare the same with VOD.

10

Or

Supply the specification of a VAD unit & describe the process in detail.

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4. (a) Calculate the amount of High Carbon FeMn and FeSi is required to produce 10 ton steel of following composition.

C = 0.45 to 0.50%

Mn = 1.30 to 1.40%

Si = 0.50 to 0.70%

The liquid melt has the following composition :

C = 0.20%,

Mn = 0.10%

Si = 0.05%

The composition of Ferro Manganese & Ferro silicon used for addition are as follow .

FeMn -- C = 7%, Mn = 70%

FeSi -- Si = 70%

Recovery of ferro alloys are 90%. 10

(b) Describe the physical chemistry of FeSi production from quartz. 10

Or

Describe the process for the production of High Carbon Ferro Chrome.

5) (a) Describe in detail the principle & operation of

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Submerged Arc Furnace (SAF) for the production of Ferro alloys. 10

(b) Describe the fluxless process of FeMn production and its advantages over fluxed process of Ferro Manganese production. 10

Or

(a) Classify Ferro Manganese alloys

(b) Classify Ferro Chrome alloys