

MME 2017

(Set-T₁)

B.Tech-7th
Steel Making

Full Marks : 70

Time : 3 hours

Answer six questions including Q. No. 1
which is compulsory

The figures in the right-hand margin indicate marks

Symbols carry usual meaning

1. Answer the following questions : 2 × 10

✓ (a) In which form/mode alloying elements are added to steel and why some times we do not prefer ferroalloys form ?

✓ (b) What do you mean by inclusion engineering ? And what are adverse effects of inclusion in steels ?

✓ (c) What is JFN in LD steel making and how it affects the composition of impurities during steel making ?

(d) What is regenerative principle in steel making and how it is beneficial ?

(e) What is the difference between acid and basic steel making process ?

✓ (f) What is synthetic slag and double slag practice during steel making ?

✓ (g) What is carbon and lime boil during steel making process ?

✓ (h) What is basic principle of vacuum degassing of steel ?

(i) What are network formers and breakers ?

✓ (j) Why it is difficult to remove Mn at the end of the blowing in Ld process.

2. Write short notes on two of the following : 5 × 2

✓ (a) Steel types-killed, semi killed, rimming steel

✓ (ii) Submerged Entry Nozzles (SEN)

3. (a) What is foamy slag practice and what are its advantages in EAF steel making. 6

(Turn Over)

(b) Justify how Fe-Mn forms an ideal solution, whereas the Fe-Cu exhibits strong positive deviation and the Fe-Si strong negative from Raoult's law. 4

4. With a sketch and write details on post solidification treatment. 10

Or

What are the different impurities present in pig irons and write all the condition for its removal?

5. (a) How many types of converter steel making process are there, to justify draw a sketch of them and what are the different mean of bath stirring. 6

(b) How tundish work in continuous casting process and what are the advantages of it? 4

(a) What is twin heat furnace of steel making and write its advantages over old BOHF furnace. 6

(b) Draw a sketch to show sequence of elimination of impurities during LD steel making process. 4

7. (a) What is CAS-OB process of secondary steel making process? 6

(b) What is IGP and concept of water model? 4

8. (a) What the principle of continuous casting and draw a S type continuous casting machine diagram, show the different components of it. 6

(b) What are the different defects in continuous casting ingots explain any two of them. 4

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