Registration No. :

Total number of printed pages – 2

B. Tech

PCMT 4402

Seventh Semester (Special) Examination – 2013

STEEL MAKING

BRANCH : MME

QUESTION CODE : D 475

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following questions :   2 ×10

   (a) Hot shortness and cold shortness is observed in steel due to the presence of _____ and _____ impurity elements respectively.

   (b) Give one example each for pneumatic and hearth process of steelmaking.

   (c) Name a process for each bottom and combined blowing process.

   (d) What are the two ferro-alloys used together for effective deoxidation w.r.t the growth of deoxidation products ?

   (e) How carbon boil enhances steel making process ?

   (f) Why lime and limestone are used as flux in LD and OBM process respectively ?

   (g) Give three favourable conditions for phosphorous removal.

   (h) Why centerline segregation is seen in continuous casting process ?

   (i) Give two advantages of EAF over LD process.

   (j) What is JFN ?

2. (a) Briefly describe the points to be considered during choosing the best deoxidizer.   5

   (b) Give the mechanism of deoxidation.   5

P.T.O.

3. (a) Briefly describe the carbon reaction in steelmaking. 5

   (b) Differentiate between acid and basic steel making. 5

4. Briefly describe duplex process of stainless steel making process. 10

5. (a) Describe the lance design in LD process. 5

   (b) Briefly describe the raw materials used in LD as metallic feed. 5

6. (a) What are the modern developments in OBM process ? 5

   (b) Explain the salient features of LDAC process. 5

7. (a) Explain the circulation degassing with an example. 5

   (b) Describe the effects of inclusion on steel properties. 5

8. Answer any **two** of the following : 5×2

   (a) Write short notes on ESR process.

   (b) Differentiate between VOD and AOD process.

   (c) Explain why open hearth process is obsolete.

   (d) Justify the use of DRI in EAF as a substitute of scrap.