STEEL PLANT REFRACTORIES (SEMESTER - 8)

CS/B.Tech(CT)/SEM-8/CT-801D/09

1. ....
Signature of Invigilator

2. ....
Signature of the Officer-in-Charge

Reg. No.

Roll No. of the Candidate

CS/B.Tech(CT)/SEM-8/CT-801D/09

ENGINEERING & MANAGEMENT EXAMINATIONS, APRIL – 2009

STEEL PLANT REFRACTORIES (SEMESTER - 8)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.
   b) For **Groups – B** & **C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

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Marks Obtained

	Group – A										Group – B			Group – C				
Question Number																	***Total Marks***	***Examiner's Signature***
Marks Obtained																		

....
Head-Examiner/Co-Ordinator/Scrutineer

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GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

i) Stainless steel is produced in

a) blast furnace b) L.D. converter

c) A.O.D. d) none of these. ☐

ii) Blast furnace tough mix is made of

a) low cement castable b) ultralow cement castable

c) silica free castable d) none of these. ☐

iii) Bricks used in L.D. converter working lining are

a) high alumina burnt b) burnt magnesia

c) MgO - carbon d) none of these. ☐

iv) Bricks used for making coke oven batteries are

a) burnt dolomite b) burnt magnesia

c) silica d) none of these. ☐

v) Indian magnesite is not suitable for making MgO-C bricks for critical applications because it contains

a) low slica b) low Fe_2O_3

c) high SiO_2 d) none of these. ☐

vi) Torpedo laddle is used for

a) production of hot liquid iron

b) transportation of liquid hot iron

c) production of liquid steel

d) none of these. ☐

vii) Tundish permanent lining is made of

a) low cement castable b) high alumina bricks

c) burnt dolomite bricks d) none of these. ☐

viii) Direct bonded bricks have

a) low corrosion resistance b) lower R.U.L. (ta)

c) higher H.M.O.R. d) none of these. ☐

ix) Slag zone of a steel making laddle is usually made of

a) Al_2O_3 - MgO-C bricks b) MgO - Al_2O_3 - C bricks

c) MgO - C bricks d) none of these. ☐

x) Laddle shrouds are made in

a) ordinary hydraulic press b) frictional screw press

c) cold isostatic press d) none of these. ☐

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Discuss briefly why fused magnesia is more suitable than sintered magnesia to make MgO-C bricks.

3. Discuss in short why DBMC bricks have better performance than conventional mag-chrome bricks in vacuum oxygen degassing unit (V.O.D.).

4. Why are Al_2O_3 - MgO - C bricks preferred than MgO - C bricks in metal zone of steel laddle ?

5. Discuss how burnt dolomite bricks are made in the plant.

6. Discuss the role of laddle shrouds, sub-entry nozzles during casting of steel.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Discuss briefly working lining details of a LD converter. What type of refractories are suitable in LD converter and why ? State some of their important properties. 7 + 4 + 4

8. What type of oxide refractories are used in making blast furnace bottom blocks ? Discuss briefly how such blocks are produced in the plant. State some of their important properties. 3 + 8 + 4

9. What are edge and flat pressing ? What are the advantages of bricks made by edge pressing in lining in A.O.D. laddle ? Discuss briefly how bricks of dimension 450 ∞ 150 ∞ 100 mm can both be produced both by edge and flat pressing.

(2 × 2) + 3 + 8

10. Write short notes on any *three* of the following : 3 × 5

a) Silica bricks for coke oven

b) DBMC for V.O.D. laddle

c) MgO - C for laddle slag zone

d) Blast furnace Tap hole clay

e) Burnt dolomite / magdolo bricks for A.O.D. working lining.

END