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CS / B.TECH (CT) / SEM-6 / CT-601 / 2011

2011

REFRACTORIES – II

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) Most suitable refractories in working lining in steel laddle is

   a) burnt bauxite bricks b) burnt MgO-bricks

   c) MgO-C bricks d) none of these.

   ii) Binder used in Al_2O_3-MgO-C bricks is

   a) Liquid resine b) Paraffin

   c) Dextrin d) none of these.

   iii) Indian DBM is not suitable in making MgO-C bricks because it contents

   a) high SiO_2 b) high Al_2O_3

   c) high Cr_2O_3 d) none of these.

iv) Pitch bonded MgO-C bricks are tempered at

a) 200°C - 250°C b) 250°C - 300°C

c) 110°C d) none of these.

v) Vacuum seal packing is used for packing of

a) MgO-C bricks b) Dolo-Carbon bricks

c) Al_2O_3-MgO-C bricks d) none of these.

vi) Drying aid used in castable refractories is

a) SSF b) ORF

c) SiC-powder d) none of these.

vii) Binder used in N.C.C is

a) $\alpha - Al_2O_3$ b) $\beta - Al_2O_3$

c) $\rho - Al_2O_3$ d) none of these.

viii) Binder used in self flow castable is

a) CA-cement b) Collidal SiO_2

c) Micro SiO_2 d) none of these.

ix) Thermal shock-resistance is higher in castable refractories than shape refractories because of

a) lower porosity b) higher porosity

c) higher density d) none of these.

x) MgO-Al_2O_3-C bricks have

a) good oxidation resistance

b) good corrosion resistance

c) good erosion resistance

d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Compare refractory properties of fused magnesia and sintered magnesia for MgO-C bricks.

3. Compare the properties of Resin and Pitch bonded MgO bricks.

4. Define Edge and Flat pressing. State properties of Edge and Flat pressed MgO-C bricks.

5. What are the materials added as Extra-addition in castable refractories and why ?

6. What are the disadvantages of castable refractories over shape refractories.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. What are MgO-C, MgO-Al_2O_3-C and Al_2O_3-MgO-C bricks ? Name different raw materials used in making Al_2O_3-MgO-C bricks. Discuss briefly with process flow diagram, how Al_2O_3-MgO-C bricks are produced in the plant. State some of its important properties. $(1 \times 3) + 2 + 7 + 3$

8. Name different raw materials and their proportions in making bricks with the following properties :

wt% Al_2O_3 + 99% , BD - 3·00 gm/cc (min) %, AP – 16 (max), CCS-1000 kg/cm^2 (min), R.U.L. (ta) +1700°C.

Discuss briefly with process flow diagram how such bricks are produced in the plant. State some of its process parameters. 2 + 3 + 8 + 2

9. Write short notes on any *three* of the following : 3 × 5
   a) Gunning Mixes
   b) Ramming Mixes
   c) Insulating castables
   d) Heating schedule of monolithics.

10. a) What do you mean by gel bonded castables ?
    b) What are the advantages of gel bonded castables over LCC and ULCC ?
    c) What are the characteristics of gel bonded castables ?
    d) What are the applications of it ? 1 + 5 + 4 + 5

11. a) What is the binder used in NCC ?
    b) How does this binder develop green strength as well as high temperature strength in NCC ?
    c) What are the disadvantages of using this type of bind in NCC ?
    d) How is workability of such castables maintained ?

3 + 5 + 4 + 3

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