



Name :
Roll No. :
Invigilator's Signature :

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

2011

REFRACTORIES – II

Time Allotted : 3 Hours

Full Marks : 70

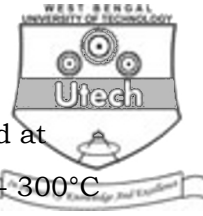
The figures in the margin indicate full marks.

*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 ladle 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 resin b) Paraffin
 - c) Dextrin d) none of these.
 - iii) Indian DBM is not suitable in making MgO-C bricks because it contains
 - 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) $200^{\circ}\text{C} - 250^{\circ}\text{C}$ b) $250^{\circ}\text{C} - 300^{\circ}\text{C}$
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) $\alpha - \text{Al}_2\text{O}_3$ b) $\beta - \text{Al}_2\text{O}_3$
c) $\rho - \text{Al}_2\text{O}_3$ 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. $3 \times 5 = 15$

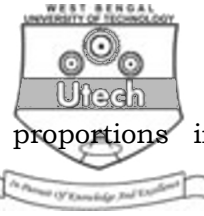
2. Compare refractory properties of fused magnesia and sintered magnesia for MgO-C bricks.
3. Compare the properties of Resin and Pitch bonded MgO bricks.
4. Define Edge and Flat pressing. State properties of Edge and Flat pressed MgO-C bricks.
5. What are the materials added as Extra-addition in castable 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-Al₂O₃-C and Al₂O₃-MgO-C bricks ? Name different raw materials used in making Al₂O₃-MgO-C bricks. Discuss briefly with process flow diagram, how Al₂O₃-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/cm² (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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