

No. of Printed Pages : 7

Sl. No.

Question Booklet Code

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21MNP1S1LT

M. Tech. I Semester Degree Examination, April/May - 2023
Skill Enhancement Courses (SEC)
MINERAL PROCESSING
Furnaces and Refractory
(CBCS)

Time : 1 Hour

Maximum Marks : 30

INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four/two/one versions of Question Booklets with Question Booklet Code viz. **A, B, C & D / A & B / A**.
2. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same Code.
3. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him contains all the 30 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same Code. This is most important.
4. A blank sheet of paper is attached to the Question Booklet. This may be used for Rough Work.
5. **Please read carefully all the instructions on the top of the Answer Sheet before marking your answers.**
6. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using **Black Ball-Point Pen** in the OMR Answer Sheet.
7. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator.
8. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.
9. First fifteen minutes is provided to fill the general information of the Student. Eg. Student Name, Student ID, etc. in the OMR Answer Sheet.
10. Without the instruction of the Invigilator do not open the Question Paper Booklet Seal.

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P.T.O.

1. Addition of Gorg to fireclay is mainly because of _____.
(A) anti-shirking element (B) anti-scaling element
(C) anti-spalling element (D) all the above

2. Which one of the following variables affects the furnace capacity ?
(A) Temperature of the flue gas
(B) Thermal conductivity of the stock
(C) Thickness of the heating stock
(D) All the above

3. Ramming masses are used for :
(A) obtaining monolithic working faces
(B) repairing furnace parts
(C) both (A) and (B)
(D) none of the above

4. Which is the most thermally efficient furnace ?
(A) reheating furnace (B) reverberator furnace
(C) rotary kilns (D) boiler furnace

5. Spalling tendency of refractories is reduced by increasing :
(A) Porosity (B) Specific gravity
(C) Thermal conductivity (D) Strength

6. The raw materials for silica refractories are :
(A) Al_2O_3 (B) CaCO_3 (C) SiO_2 (D) MgSiO_3

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7. Example of a Indirectly heated furnace :
- (A) Hood annealing furnace (B) Muffle furnace
(C) Tube furnace (D) All the above
8. The example of basic refractory material is :
- (A) fireclay (B) silica (C) lime (D) graphite
9. Which is not a high alumina refractory ?
- (A) mullite (B) corundum (C) bauxite (D) dolomite
10. Tar dolomite bricks are used in the :
- (A) basic besmear convertor (B) open hearth furnace
(C) blast furnace (D) rotary kilns
11. Flue gas outlet temperature from Chimney of any furnace be ideally about :
- (A) 50 (B) 100 (C) 150 (D) 200
12. The heating capacity of muffle furnace depends on the :
- (A) Surface area and emissivity of the stock
(B) Properties of the wall
(C) Both (A) and (B)
(D) Exhaust gas temperature
13. Use of pulverized coal in boilers provides :
- (A) Higher calorific values (B) Better Combustion
(C) Smokeless Operation (D) Less erosion on furnace wall



14. An example of a periodic furnace is the :
- (A) Blast furnace (B) Blast furnace Stoves
(C) Coke oven (D) Rotary Kilns
15. Furnace is not an electric furnace :
- (A) arc furnace (B) induction furnace
(C) pot furnace (D) resistance furnace
16. The main raw material for manufacture of Silicon carbide refractory is :
- (A) Corundum (B) Carborandum
(C) Bauxite (D) Pericase
17. Which of the following is a directly fired intermediate furnace ?
- (A) beam reheating furnace (B) reverberator furnace
(C) tower furnace (D) tunnel kiln
18. The thermal conductivity of fireclay varies from :
- (A) 0.8 to 0.95 (B) 0.6 to 0.7 (C) 0.5 to 0.6 (D) 0.4 to 0.6
19. An improved and fuel efficient version of the pusher type reheating furnace is :
- (A) Walking beam furnace (B) Shaft furnace
(C) Tunnel furnace (D) Rotary hearth furnace
20. Which of the following is hear treatment furnace ?
- (A) Muffle furnace (B) Annealing furnace
(C) Reheating furnace (D) Rotary Kiln



- 21.** Bauxite Calcining rotary Kilns are lined with :
- (A) Fireclay bricks (B) Carbon bricks
(C) Aluminium bricks (D) Corundum bricks
- 22.** Fireclay bricks are used in :
- (A) furnaces allowed to cool frequently
(B) flues
(C) chimney linings
(D) all the above
- 23.** Which one contains maximum percentage of Al_2O_3 ?
- (A) fire bricks (B) Sillimanite
(C) magnesite (D) Aluminous fire bricks
- 24.** The heating of continuous reheating furnace depends upon the :
- (A) Hearth area (B) Ratio of wall surface to stock surface
(C) Emissivity of the stock (D) All the above
- 25.** Heat balance of the furnace provided by means of determining the :
- (A) thermal efficiency of the process
(B) sources of heat loss
(C) scope of reduction of heat loss
(D) all the above



26. Which one expands on heating ?

- (A) Silica bricks (B) Fireclay bricks
(C) Both (A) and (B) (D) Aluminous bricks

27. Porosity of silica bricks varies from :

- (A) 5 to 10% (B) 20 to 30% (C) 35 to 50% (D) 50 to 70%

28. Which of the following variables does not affect the furnace capacity ?

- (A) Size of the furnace
(B) Gas velocity in furnace
(C) Ratio of the wall surface to surface of stock
(D) None

29. Which of the following is a batch furnace ?

- (A) Cupola (B) Reheating furnace
(C) Glass tank furnace (D) None of these

30. Chrome magnesite bricks are :

- (A) Acidic in nature
(B) Neutral in nature
(C) Having higher RUL than silica bricks
(D) Made from 30% chromite and 70% silica

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SPACE FOR ROUGH WORK

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