**MET-303-FURANCES, REFERACTORIES & PYROMETERY**

**BIFURCATION FOR UNIT TESTS**

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| --- | --- | --- | --- |
| **S.NO.** | **MAJOR TOPICS** | **SHORT TYPE** | **ESSAY TYPE** |
| **UNIT TEST-I** |
| 1 | Furances | 2 | 1 |
| 2 | Processing Furances | 1 | 2 |
| 3 | Refractories | 2 | 1 |
| **UNIT TEST-II** |
| 4 | Manufacturing of Refractory Bricks | 2 | 1 |
| 5 | Heat Transfer | 2 | 1 |
| 6 | Pyrometry | 2 | 1 |

**D.MET.E III SEMESTER**

**MET-303 FURNACES, REFERACTORIES & PYROMETERY (C-14)**

**Model Unit Test Paper-1**

 **Unit Test-1**

**Part-A**

**Short type questions: (3x2=6m)**

1. Defined Controlled Atmosphere.

2. List out different types of smelting furnaces.

3.State any four properties of refractories.

**Part-B**

**Answer any 2 questions: (2x7=14m)**

4. a) Explain the working principle of Muffle furnace with the help of a neat sketch?(3.5m)

 b) What is the necessity of maintaining controlled atmosphere(3.5m)

5. List out the furnaces and explain in detail about iron blast furnace with a neat sketch?(2+5)

6 Explain the causes, failures and remedies of refractory?

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**MET-303 FUELS REFRACTORIES AND PYROMETRY**

**Model Unit Test Paper-II**

**UNIT TEST-1**

**Part-A**

**Short type questions: (3x2=6m)**

1. List out the types various types of heat treatment furnaces?

2. State the different types of roasting furnace?

3.Classify the refractory materials?

**Part-B**

**Answer any 2 questions: (2x7=14m)**

4. a) Explain the working principle of salt bath furnace with the help of a neat sketch?(3.5m)

 b) Know about the exothermic and endothermic Atmosphere (3.5m)

5. Explain the construction of induction furnace with the help of neat sketch? (7m)

6 .List out the test conducted on refractories and explain them on detail?

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**MET-303 FUELS REFRACTORIES AND PYROMETRY**

**Model Unit Test Paper-I**

**UNIT TEST-2**

**Part-A**

**Short type questions: (3x2=6m)**

1. Write down the two properties of fire clay refractories?

2. State the principle of thermocouple?

3. State the different modes of heat transfer?

**Part-B**

**Answer any 2 questions: (2x7=14m)**

4. List out two applications of sio2 and explain phase transformations in silica and quartz?(7m)

 5. State planks and wiens law of distribution of radiant energy?(2+5)

6 a) Define pyrometer b) Describe the working principle of optical pyrometers?

**D.MET.E III SEMESTER**

**MET-303 FUELS REFRACTORIES AND PYROMETRY**

**MODEL PAPER-II**

 **UNIT TEST-2**

**Part-A**

**Short type questions: (3x2=6m)**

1. Write two properties and two applications of carbon bricks?

2. define Fourier’s law of heat conduction?

3 list out different types of pyrometer?

**Part-B**

**Answer any 2 questions: (2x7=14m)**

4. explain in detail manufacturing process of magnesite refractories?(7m)

 5. a) state Stefan Boltzmann law of radiation?(1m)

 b) Define emissivity(2m)

 c) Define absorbivity?(2m)

 d) Define refractory?(2m)

6 a) explain the working of radiation pyrometer?(5m)

b) Compare optical and radiation pyrometer?(2m)

 MET-303 FURNACES REFRACTORIES AND PYROMETRY

BOARD DIPLOMA EXAMINATIONS (C-14)

Model Paper-1

Short Type questions

 Answer all the Questions (3X10=30M)

Part-A

Answer all questions.

1. Classify the heat treating furnaces based on their design & Use.
2. What is the necessity of maintaining controlled atmosphere.
3. Draw a neat sketch of Iron Blast furnace.
4. List out the properties of refractory materials.
5. Write short notes on P.C.E lists conducted on Refractory.
6. Write down three properties of fire clay refractories.
7. State different Modes of heat transfer.
8. Define conduction, blackbody, Absorbicity.
9. What is need of Pyrometer
10. Write down three Applications of Thermocouple.

 PART-B (Essay Type) ( 5X10=50M)

Answer any five questions**.**

 11) Explain the working principle of the following furnaces with a neat Sketch.

 a)Muffle furnace (5M)

 b) Bogie furnaces (5M)

12) Explain the detail about flash roaster with a neat sketch (10M)

13) Explain the construction of following furnace.

a) Introduction furnace

b)Electric Are furnace.

14) Define the term refractory (2M) & Classify refractory materials with examples.

15)State phase transformations in Silica /quartz remedies .

16) Explain the manufacturing process of Magnesite refracories.

17) Calculate the rate of heat transfer in single & composite walls of metallurgical systems.

18) State planck & Wine law of distribution of radiant energy.

 MET-303 FURNACES REFRACTORIES AND PYROMETRY

BOARD DIPLOMA EXAMINATIONS (C-14)

Model Paper-2

Short Type questions

 Answer all the Questions (3X10=30M)

Part –A

1. Write short notes on importance of furnaces.
2. Define controlled Atmosphere.
3. List out different types of roasting furnace .
4. What is need of refractories.
5. Classify refractory materials.
6. Write down three properties of Magnesite.
7. State different modes of heat transfer.
8. State fourcers law of Heat conduction.
9. Write down different types of pyrometers.
10. Compare Optical & Radiation pyrometers.

 Part-B (Essay Type) (5X10=50M)

1. Explain the working principle of salt bath & pet furnace.
2. Explain the in wetall with neat sketch multiple health roaster.
3. Explain the construction of Iron blast with a neat sketch.
4. Explain the following tests on refractories .

a) Porosity

b) Ruc

c) Permeability

d) Bulk Density

 15) Explain Manufacturing of Alumino Silicate refractories (10M)

 16) State properties & Applications of carbon bricks (2M)

 17) a) Define Encessity, Absorbicity & Reflectinty.

 b) State Planck & Weins law of distribution of radiant Energy (4M)

 18) Principle of Resistance Pyrometres (3M)

 a) Advantages - (2M) b) Limitations - (2M) C) Applications –(3M)