UNIVERSITY OF MINES AND TECHNOLOGY

SECOND SEMESTER EXAMINATION, MAY 2018

COURSE NO.: MR 274

COURSE NAME: PYROMETALLURGY

CLASS: MR II

TIME: 3 HOURS

Attempt All the Questions in Section A and THREE Others in Section B

SECTION A Attempt all Questions [40 marks]

1 Explain the shrinking core model

2 What information do you get from proximate analysis

3 In what way does pyrometallurgical processes contribute to global warming

4 What is calcinations

5 Explain the zone refining process

6 Explain the term combustion

7 Mention the ways in which drying can be accomplished

8 What are refractories

9 Explain the types of smelting processes

10 Mention four functions of slags

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SECTION B **Attempt THREE Questions** **[60 marks]**

Question One

a. Explain the term agglomeration.

Write short notes on the following:

b. Nodulising

c. Briquetting

d. Sintering

e. Pelletizing

Question Two

2a. The ultimate analysis of a fuel gave the following values

Element	C	H	O	N	S	Moisture
%	82.7	5.2	8.4	0.9	2.1	0.7

Estimate the gross and net calorific values of the fuel

2b. What are the different types of cement?

With the aid of a flow sheet describe the manufacturing process for cement

Question Three

a. What causes refractoriness in gold ores?

b. With the aid of a flow sheet explain how gold amalgam can be processed to obtain 99.6% gold.

Question Four

Copper sulphide ore with copper grade 2% was floated to obtain flotation concentrate with copper grade 32%. With the aid of a flow sheet, discuss how you can convert the flotation concentrate to copper with grade above 99%.