Name…………………………………………..………………..ID no................................... ..

PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Final Examination : Semester 2   **Academic Year : 2007**

Date : 18 February 2008   **Time: 09.00-12.00**

Subject : 226-318 INDUSTRIAL CERAMICS   **Room: R300**

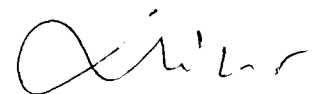...

ทุจริตในการสอบโทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทุจริต และพักการเรียน 1 ภาคการศึกษา

Instruction :

1. Do all of 21 questions.

2. The mark appears at the end of each question.

3. Total score is 100.

4. Your must answer on the question sheets.

5. During the time of exam. You are not allowed to ask anyone.

6. Calculator, book and notes are allowed.

7. Put you name and ID on every page.

Assf.Prof.Sane   Thanthadalug

Name..ID no.................

Final Exam 226-318 Industrial Ceramics 2007

1. The specimen is tested under pressure of 1.96 kg/cm^2 at very high temperature. Why is it done? (3.5 marks)

2. A firebrick was daily fired in a periodic kiln for a year without crack. What s the property of this firebrick? (3.5 marks)

3. A ceramic piece can suddenly resist very large change temperature. What is this property? (3.5 marks)

4. A, B, C and D are 4 firebricks of same ceramics. The bulk densities and apparent porosity of A, B, C, D are 2.95, 2.90, 2.95, 2.85 g/cc and 29, 30, 28, 31 %. What should be used for lining cupola? (3.5 marks)

5. How do you produce a refractory brick without firing? (3.5 marks)

6. What is ﹍ aluminosilicate firebrick? (3.5 marks)

7. What is carbofrax ? (3.5 marks)

8. What is the difference between a firebrick and a steel bar in term of thermal expansion? (3.5 marks)

9. How do you keep refractory mortar? (3.5 marks)

10. Why is the efficiency of a normal heat treatment furnace higher than a vacuum one? (3.5 marks)

11. One is firing ceramic product with less inlet air of gas- fired kiln. What will the atmosphere be in the kiln? (3.5 marks)

12. Why does an electric kiln consume less energy than a gas-fired kiln? (3.5 marks)

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19. Given LPG of 11,000 Kca/kg, 250 lbs of silica chamotte, 10 % of total efficiency and 1,200 – 1,300 °C within 1.5 hrs. (15 marks)

a) Find Kcal of input .
b) What is the consumption rate of fuel?
c) How many burners of 1.5 kg/hr are required?

20. Given an empirical formula of glaze as follows: (12 marks)

a K_2O

0.7824 CaO	0.3497 Al_2O_3	x SiO_2
0.1391 Na_2O	0.0207 Fe_2O_3	

Before getting the above, the formula is

0.2835 K_2O

B CaO	C Al_2O_3	6.9904 SiO_2
Y Na_2O	D Fe_2O_3	

Find a and x.

21.

Raw Mat.	Moles	M.W.	Batch weight
$CaCO_3$	0.7572	100	75.72
$MgCO_3$	0.1135	84	Y
B-Feldspar	X	596	76.94
Kaolin	A	258	59.13
Silica flour	B	60	93.44
		Total	314.76

Find X and Y (10 Marks)