



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2010 SESSION

SUBJECT CODE : FTB 33102
SUBJECT TITLE : CORROSION
LEVEL : BACHELOR
DURATION : 12.00 noon – 2.00 pm
(2 HOURS)
DATE / TIME : 26 APRIL 2010

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
 2. This question paper is printed on both sides of the paper.
 3. Please write your answers on the answer booklet provided.
 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
 5. Answer all questions.
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THERE ARE 1 PRINTED PAGE OF QUESTIONS, EXCLUDING THIS PAGE.

Question 1

Using suitable example and/or diagram, briefly explain:

(a) Aqueous corrosion.

(10 marks)

(a) Rusting of steel.

(10 marks)

Question 2

Differentiate between these following phenomena:

(a) Anodic reaction and sacrificial anode.

(10 marks)

(b) Cathode reaction and cathodic protection.

(10 marks)

Question 3

Explain the functions of kinetics of corrosion, mixed potential theory and polarization in determining how fast the corrosion occurs.

(10 marks)

Question 4

Plot tafel normally used to show corrosion activity of zinc in an acid. Sketch a typical plot for corrosion of zinc in acid. Explain potential behavior versus current density for anodic and cathodic reactions. What happen if potential and current density is in equilibrium.

(15 marks)

Question 5

Briefly explain five factors influencing stress-corrosion cracking.

(25 marks)

Question 6

Following rationalization of the water supply industry, the hard water supply to a certain city is replaced by soft water in pipes made of copper. Within a short time, there is an alarming increase in the corrosion of metals in contact with the water. One particularly prevalent problem is rapid perforation of pure aluminum domestic cooking utensils. Using electron probe microanalysis, a local laboratory has identified traces of copper in rings of corrosion product surrounding the perforations. Give explanation of this problem.

(10 marks)

END OF QUESTION