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Ministry of high education & scientific
Research

University of Technology

Materials engineering department

Class: 3rd grade

Subject: powder metallurgy

Examiner: Dr. Mohammed. S. Hamza



Final
Examination (2014-
2015)

وزارة التعليم العالي و البحث العلمي

الجامعة التكنولوجية

قسم هندسة المواد

Date: 16-6-2014

Allowed time: 3 hours

Note: Answer four questions only, all questions have equal marks

Q1)

a) What are the general steps in the powder metallurgy process? With drawing.

b) What are the characteristics of metal powder? With drawing of morphology of powder particles.

Q2)

a) What is the atomization process? Discuss the types With drawing.

b) What is the steam treatment? Discuss the steps of the method, advantage and disadvantage.

Q3)

a) What are the differences between the prealloyed powders and precoated powders?

b) What are the rule of lubrication?

Q4)

a) What are the Isostatic compaction? With drawing.

b) What are the slip casting? With drawing.

Q5)

a) The apparent density of powder 1.5 gm/cm^3 , the weight of the powder 300gm, the weight of the pycnometer is 350gm and the weight of liquid is 150gm. Find the volume of the pycnometer, if the liquid density 3 gm/cm^3 .

b)

Calculate the applied load, if the green strength is 318.47Mpa, the diameter of the specimen 60mm, and the thickness of the specimen 0.20 of the diameter.