Examination Period 3: 2016/17

LEA200117N

Module Title: Leather Technology 2
Level: Five
Time Allowed: Three hours

Instructions to students:

- Enter your student number not your name on all answer books.
- Answer five questions: two questions from Section A and three questions from Section B.
- Neither books nor notes may be taken into the examination.
- The use of a non-programmable calculator is permitted.

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Section A

Answer two out of three questions.

Question 1

a. Identify five physical and or chemical properties required for the automotive and domestic upholstery leather, including specifications.

(10 marks)

b. Compare the most important differences (aesthetic and technical) in required properties in formal, casual and performance footwear.

(10 marks)

Total: 20 marks

Question 2

a. Design a wet white automotive upholstery leather from salted cow hide to dried crust for full grain.

(10 marks)

b. Describe the key points of the process including the parameters.

(10 marks)

Total: 20 marks

Question 3

a. Define elastic and plastic behaviour of leather with examples

(4 marks)

b. Explain how temperature and moisture influence the plastic and elastic behaviour of leather from various tanages (metal and metal free variations).

(6 marks)

c. Explain using examples how a tanner may manipulate the moisture and temperature to control plastic and elastic nature of leather to ensure maximum output (area yield) during leather manufacturing (raw to dried crust).

(10 marks)

Total: 20 marks

End of Section A
Section B follows overleaf
Section B

Answer three out of five questions.

Question 4

a. Discuss the differences between pit vegetable tanning and drum vegetable tanning of heavy leathers processing.  
   (8 marks)

b. Discuss the differences in processing to produce heavy and light leathers (with vegetable tannage) and likely end uses of leathers produced. Consider equipment, raw materials, chemicals and any other relevant process parameters.  
   (6 marks)

c. Discuss two of the following vegetable tanning extracts of Oak Bark, Chestnut, Mimosa, Quebracho or Tara with reference to vegetable source, aesthetics and properties when used in tanning or retanning.  
   (6 marks)

Total: 20 marks

Question 5

a. Design a water-resistant footwear from wetblue bovine up to dry crust.  
   (10 marks)

b. Described the key factors you need to consider when processing waterproof leather including the process parameters (wetblue to dry crust).  
   (10 marks)

Total: 20 marks

Question 6

a. Compare green fleshing and lime fleshing of bovine hides (i.e which fleshing variations may have positive impacts on the environment, waste products, process flow, leather qualities, but at the cost of possible some negative impact).  
   (10 marks)

b. Compare lime splitting with wet blue splitting from bovine hides (i.e which splitting variations may have positive impacts on the environment, waste products, process flow, leather qualities, but at the cost of possibly some negative impact).  
   (10 marks)

Total: 20 marks

Section B continues overleaf
Question 7

a. Contrast the processing variations to obtain a shoe upper and automotive upholstery from bovine raw material. Your answer should focus on neutralisation pH, type of fatliquor, thickness of leather, and type of drying. (8 marks)

b. Give brief definitions for:
   i. masking agent
   ii. metal capping
   iii. first phase drying (6 marks)

c. What are required characteristics and properties for high quality garment leathers? (4 marks)

d. List two properties that glutaraldehyde add to the garment leathers (2 marks)

Total: 20 marks

Question 8

a. Design a sheep skin rug (wool on) leather from salted to finished. (10 marks)

b. Describe the key points of the process (stated in section a.) including the parameters. (10 marks)

Total: 20 marks

End of Section B
End of Paper