Summer Examinations 2016

LEA200116N

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 two questions from Section A and three questions from Section B.
- All questions are equally weighted. Where a question has more than one part the division of marks is stated.
- Begin each question in a separate answer book; label each answer book clearly with the number of the question you are answering.
- 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.

1. a. List the strength properties associated with shoe upper leathers. Explain what ball burst is.  
   (10 marks)

   b. Describe five different process steps that can help achieve high strength in shoe upper leathers.  
   (10 marks)

   (Total: 20 marks)

2. a. Identify five desired properties for domestic upholstery leathers.  
   (5 marks)

   b. For the raw material below, outline unique operation(s) that will help you achieve a quality shoe upper leather:

   i. Dry cattle hide;  
      (5 marks)

   ii. Wet-salted goat;  
      (5 marks)

   iii. Pickled hair sheep.  
      (5 marks)

   (Total: 20 marks)

3. Heavy vegetable tanned leathers have many physical and aesthetic requirements. List five technical requirements and discuss the reasons why they are specified and how they may be achieved through wet or dry processing.  
   (20 marks)

Section A Total: 40 marks
Section B

Answer **three** out of **four** questions.

4.  **a.** Give brief definitions for:

   i. masking agent;
   ii. metal capping;
   iii. shrunken grain;
   iv. first phase drying;
   v. sulfur tannage.

   (10 marks)

   **b.** Discuss the technology and the fundamentals of toggle drying and compare it to vacuum drying (specifically mechanism of drying and the effect of tension). Your answer should include a discussion of the resulting leather properties.

   (10 marks)

   (Total: 20 marks)

5.  For automotive leathers:

   **a.** Discuss the differing properties obtained from:

   i. neutralisation to pH 5.2;
   ii. pre-metallised dyestuffs;
   iii. lightweight resins in post tanning.

   (10 marks)

   **b.** Explain the purposes in post tanning of:

   i. closed door wash;
   ii. melamine resin;
   iii. anionic neutralising products;
   iv. adding zirconium;
   v. raw oil blended with the fatliquor.

   (10 marks)

   Total: 20 marks

Section B continues overleaf
6  a. Discuss the differences between pit vegetable tanning and drum vegetable tanning of heavy leathers? 

(10 marks)

b. Compare and contrast the strategies used to obtain a shoe upper, a bag leather and automotive upholstery from bovine raw material. Your answer should focus on neutralisation pH, type of fatliquor, thickness of leather, and type of drying.

(10 marks)

(Total: 20 marks)

7 Outline a process for the production of white-coloured chromium-tanned shoe leathers from limed flesh split to the end of wet post tanning (not including crusting operations).

Include:

i. a process flow diagram;

(10 marks)

ii. dyeing details;

(3 marks)

iii. post tanning details;

(2 marks)

iv. quality control testing.

(5 marks)

(Total: 20 marks)

Section B Total: 60 marks