

Department of Leather Engineering
Khulna University of Engineering & Technology
B. Sc. Engineering 1st Year 1st term Examination-2022
LE1101
Leather Manufacturing Technology I

Time: 3.0 Hours

Full Mark

- Nil. i) Answer any **THREE** questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if any missing.

SECTION-A

- 1(a) Define the terms with examples: (i) Hide, (ii) Skin, (iii) Tanning and (iv) Leather.
1(b) Briefly discuss on the types and sources of raw hides and skins.
1(c) If you are a tannery owner, discuss in detail the collection procedure of raw hide and skin during Eid-UL-Azha.
1(d) Write down the biological factor that influences the grain pattern characteristics of different leathers.
1(e) Write down the grain pattern of pig leather.

- 2(a) Define collagen and polypeptide chain with examples.
2(b) Briefly discuss the dermis layer with identifying microscopic view.
2(c) Sequentially state the sample preparation procedure for histological study of raw hide and skin.

- 3(a) Classify protein with approximate percentage.
3(b) Write in detail the hierarchy of collagen structure.
3(c) Define amino acid. Write down the chemical structure of following amino acids: (i) Glutamine, (ii) Arginine, (iii) Histidine and (iv) Cysteine.
3(d) Write notes: (i) OSP; (ii) Composition of raw hide and skin.
3(e) Briefly explain the influence of climate and food on the quality of hides and skin.

- 4(a) What is meant by stunning? Why bleeding is necessary after stunning?
4(b) Write down the role of tools and equipment used in flaying.
4(c) Suppose you are an expert in flaying and given a carcass; briefly discuss the method of a large animal with proper indication.
4(d) Distinguish between ripping knife and flaying knife.
4(e) State the machine flaying method for hide.

SECTION-B

- 5(a) Define curing. Write down the advantages and disadvantages of following curing agents: (i) Sodium chloride, (ii) Ozone and (iii) Antibiotics.
5(b) Mention the effect of inadequate preservation.
5(c) Assume you are given a freshly flayed cowhide during the summer season. What preservation method will you consider to preserve that hide for 3 months? Do a benefit analysis? State your reason.
5(d) State the probable effect of poor preservation of raw hide and skin.

- 1(a) What do you mean by red heat damage? Write down the impact of red heat damaged hides/skins.
- 1(b) Define leather defects. Briefly describe the direct consequences of ectoparasitizing animal.
- 1(c) State the most prevalent defect of hides and skins in Bangladesh.
- 1(d) Write short notes on the strategies for elimination of post mortem defects in skins.
- 1(e) Briefly describe the cause, effect and remedy of the following defects: scratches and tears, (ii) Brand mark.
- 1(f) State the most common reasons of low quality of hides / skins in Bangladesh.
- 2(a) What precautions should be taken while purchasing raw hides/skins for processing?
- 2(b) Discuss the UNIDO guidelines for "Second Grade" hides/skins. When rejected?
- 2(c) Write down the environmental concern of common salt in leather processing.
- 2(d) Briefly describe the opportunities and economic significance of leather in Bangladesh.
- 2(e) Write note on quick tests for defect identification.
- 3(a) Removal of hyaluronic acid is an objective in soaking operation. Explain.
- 3(b) Define surfactant. Why non-ionic surfactant is used in soaking operation? [3x]
- 3(c) State the application of enzymes in soaking operation.
- 3(d) How will you recover salt from the soaking liquor? State your opinion.
- 3(e) List out the chemicals needed to use for soaking of dried (limb) hides/skins.
- 3(f) Write short notes on the scope for the utilization of fleshing waste.