

**ANNA UNIVERSITY-2007**  
**B.E/B.TECH IV SEMESTER DEGREE EXAMINATION**  
**PRINCIPLE OF MATERIAL TESTING-I**  
**(LETHAR TECHNOLOGY)**

DECE-2007

TIME-3HOUR  
MARK-100

**ANSWER ALL THE QUESTIONS**

**PART A — (10 × 2 = 20 MARKS)**

1. What is the object of staining?
2. What is meant by fixing and hardening?
3. Why is barium chloride added at acidic pH values in the determination of sulphate content of water sample?
4. A 0.5 g sample of impure CaO is added to 50 ml of a 0.1 M HCl. The excess HCl is titrated by 5 ml of 0.12 M NaOH. Find the percentage of CaO in the sample.
5. What is the role of chrome alum in the estimation of tannin content?
6. What useful information can be obtained from the titration curve of vegetable tanning materials?
7. Why is glycerine added to the sample of boric acid in purity determination by titrating against NaOH?
8. What is the role of potassium fluoride in the determination of aluminium tanning agents?
9. What is culture medium? How is it prepared?
10. What do you understand by the term “splitting of fibre bundles”?

**PART B — (5 × 16 = 80 MARKS)**

11. Define acid value and saponification value of an oil. Describe in detail the method used for finding out iodine value of an oil.
12. (a) With the help of a suitable diagram, illustrate the relationship between the different optical systems in a compound microscope used in leather microscopy and microbiology.  
Or  
(b) Give an account of carbohydrate metabolism by bacteria.
13. (a) State the analytical methods used to assess the suitability of a vegetable tanning material for extract manufacture.  
Or  
(b) How do you estimate the quantity of zirconium present in a zirconium tanning salt?
14. (a) Write short notes on :
  - (i) Orientation of fibre structure during leather processing.
  - (ii) Iron content in water.
  - (iii) Dean & Stark method for determination of moisture content.Or  
(b) Write short notes on :
  - (i) Structure of bacterial cell.
  - (ii) Determination of content of a chrome tanning salt.

(iii) Delimiting power of a bate.

15. (a) In what stages of leather processing, does the fungal growth take place and how it affects the quality of skin/pelt/leather? How will you prevent mould growth during processing of skins?

Or

(b) Discuss the various parasitic diseases of livestock that affect the leather quality and the various measures in preventing and controlling the damages caused due to them.

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