THE OPEN UNIVERSITY OF SRI LANKA
BACHELOR OF INDUSTRIAL STUDIES / BACHELOR OF TECHNOLOGY

049

FINAL EXAMINATION – 2005 / 2006
TTX6231 ADVANCED COLOURATION TECHNOLOGY
DURATION: 3 HOURS

DATE: 11th March 2006 **TIME: 0930-1230 HOURS**

Total Number of Questions = 10 **Number of questions to be answered = 06**
Answer question 1, which is compulsory and five (05) additional questions.
Question 1 carries twenty-five (25) marks and questions 2 to 10 carry fifteen (15) marks each.

01. Compulsory question

(1) Name three requirements of a Direct Dye, for them to have affinity to cellulose substrate.

(2) Why wool is dyeable with both Basic and Acid Dyes.

(3) List four chemical groups found in Acid Dyes, according to which they are classified.

(4) Wash fastness of Direct Dyes containing end amino group can be improved by coupling with a Diazonium Salt. Why is it only of technical importance?

(5) Why some Acid Dyes are called "Acid Milling Dyes"?

(6) Why should a Direct Dye have an optimum number of solubalising groups like sulponate groups?

(7) What are the differences in the three methods used in vatting and then dyeing with a Vat Dye, by exhaust method?

(8) What reducing mixtures are used:
(a) in reducing a Vat Dye to its leuco form? and
(b) in reducing a Sulphur Dye to its soluble form?

(9) Name three different reactive groups found in Reactive Dyes.

(10) Why should there be at least five to six rinsing operations, after dyeing with a Reactive Dye?

(11) Give three different ways to dye Polyester fiber with Disperse Dyes.

(12) Why a reduction clearing process is needed in dyeing Polyester?

(13) What do you understand by Mordanting?

(14) Explain the meanings of "Blue Scale "and Grey Scale"?
(15) Give a process sequence to dye Polyester/ Cotton woven material by a continuous method, to get excellent fastness.

(16) What are the three variables in Colour?

(17) What are tri-stimulus values?

(18) What do you understand by " Mesmerism "?

(19) What is the arrangement of colour chips in a Munsel Colour Atlas?

(20) What is the importance of a Kubelka Munk Equation, in instrumental match prediction?

2. Explain the Pad steam application process of a Vat Dye on to a cotton woven fabric.

3. What is the Cold Pad Batch application method of a Reactive Dye? Explain steps you would take, to get uniform dyeing without batch to batch variation.

4. What are the conditions used in dyeing polyester, In a Jet Dyeing machine? Draw a diagram and explain the process you would carry out to dye a 100% Polyester knitted material.

5. What are the effects of pH, Temperature, Sodium ion concentration in the exhaustion of a Direct Dye, with respect to a cellulosic substrate?

6. Write short notes on:

(a) Distribution coefficients.
(b) Ostwald Colour Atlas
(c) Colour difference formula

7. Explain how, wash fastness of a dyed material is assessed according to ISO 3 or 4 method.

8. Explain how pretreatment of Polyamide affects its dyeing properties.

9. Explain the dyeing process used on cotton using a base and a naphthol, giving conditions to be maintained.

10. Write short Notes on:

(a) Thermo-sole Process
(b) Vat Acid process
(c) Fastness improvement by Fixing with Cationic resins
(d) Thermo-migration
(e) Substantivity