

General Certificate of Education
June 2006
Advanced Level Examination



HOME ECONOMICS
Unit 7 Textiles Science and Technology

HEC7

Wednesday 14 June 2006 1.30 pm to 3.00 pm

For this paper you must have:

- an 8-page answer book

You may use a calculator.

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen.
- Write the information required on the front of your answer book. The *Examining Body* for this paper is AQA. The *Paper Reference* is HEC7.
- Answer **two** questions.
- Do all rough work in the answer book. Cross through any work you do not want marked.

Information

- The maximum mark for this unit is 50.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in answers written in continuous prose.

Answer **two** questions

Each question carries 25 marks

- 1 Woad has recently been grown commercially in England. Woad contains a type of indigo and is classified as a Vat Dye.
- (a) Using your knowledge of the visible spectrum, explain why indigo-dyed fabrics are usually blue. *(4 marks)*
 - (b) Vat dyes have good to excellent colourfastness. What is meant by the term colourfastness? *(5 marks)*
 - (c) Vat dyes are often used to dye twill weave fabrics. What is meant by a twill weave fabric? *(4 marks)*
 - (d) Why is indigo-dyed denim fabric blue on the outside but white on the inside? *(4 marks)*
 - (e) Carefully explain how a typical vat dye such as indigo is used to dye 100% cotton fabrics. *(8 marks)*
- 2 Explain the meaning of each of the following terms (shown in **bold**) and discuss how the term is important with respect to the named fibre, fibre blend or textile fabric shown.
- (a) Calculate **Standard Moisture Regain (SMR)** values for fabrics containing 80% cotton and 20% polyester blends. (SMR cotton = 8.5%, SMR polyester = 0.5%) *(5 marks)*
 - (b) **Heat Setting** of 100% polyester fabrics. *(5 marks)*
 - (c) The use of **DMDHEU in** the finishing of 100% cotton fabrics. *(5 marks)*
 - (d) **Zerostat** can be used in the finishing of 100% polyester. *(5 marks)*
 - (e) Some **dry-cleaning** solvents are unsuitable for cleaning fine acetate fabrics. *(5 marks)*
- 3 Explain the reasons for each of the following statements.
- (a) Hollow polyester filaments are used for filling duvets. *(5 marks)*
 - (b) Heat-transfer printing gives best results with thermoplastic fibres. *(5 marks)*
 - (c) Fatty stains can be difficult to remove from polyester fabrics. *(5 marks)*
 - (d) Wool fibres are never used in towels. *(5 marks)*
 - (e) Blends of silk and microfibre polyester are ideal for underwear. *(5 marks)*

4 Polyamide (nylon) fibres and filaments have been used in textiles since the end of the second world war.

- (a) Give **two** reasons why polyamides have been so successful for more than 60 years. *(4 marks)*
- (b) Polyamide 6 and polyamide 6.6 are the two most important polyamides.
- (i) What is the most important difference between polyamide 6 and polyamide 6.6? *(2 marks)*
- (ii) How do moisture regain values affect the rates at which garments containing these polyamide fibres dry after washing? *(3 marks)*
- (c) The yarns used in the manufacture of ladies' tights are multifilament polyamide yarns. What is meant by the term 'multifilament yarn'? *(4 marks)*
- (d) One way of describing the yarns used to produce tights is shown below.

Yarn Type	Description	Linear Density
A	42f46	0.9 decitex
B	44f13	3.4 decitex
C	44f34	1.3 decitex

This numbering system gives the number of filaments in a yarn of a particular linear density. For example, hosiery yarns of Type A have a linear density of 42 decitex and each Type A yarn contains 46 filaments, each individual filament having a linear density of 0.9 decitex.

- (i) What is meant by the term linear density? *(2 marks)*
- (ii) Explain why Type A yarns are made from microfilaments. *(4 marks)*
- (iii) Explain why Type B yarns have fewer filaments than Type A or Type C. *(2 marks)*
- (e) Why are polyester filaments rarely used in tights? *(4 marks)*

END OF QUESTIONS

There are no questions printed on this page