

General Certificate of Education
June 2008
Advanced Level Examination



HOME ECONOMICS
Unit 7 Textiles Science and Technology

HEC7

Thursday 5 June 2008 9.00 am to 10.30 am

For this paper you must have:

- an 8-page answer book.

Time allowed: 1 hour 30 minutes

Instructions

- Use black ink or black ball-point pen. Use pencil only for drawing.
- 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 only.
- Fasten any supplementary sheets you use to the answer book before handing it to the invigilator at the end of the examination.

Information

- The maximum mark for this paper is 50.
- The marks for questions are shown in brackets.
- You will be marked on your ability to use good English, to organise information clearly and to use specialist vocabulary where appropriate.

Answer **two** questions only

There are 25 marks for each question.

- 1 (a) (i) Define the term standard moisture regain. (3 marks)
- (ii) Write the formula which is used to calculate moisture regain values. (3 marks)
- (b) The following table gives information about moisture regain allowances as recommended by British Standards.

Fibre	Regain Allowance (%)
Cotton	8.5
Viscose	13.0
Cellulose secondary acetate	9.0
Silk	11.0
Wool	16.0
Polyamide 66	6.0
Polyester	2.5

- (i) What does the table above show about the values for natural and synthetic fibres? (4 marks)
- (ii) Why is there a difference between the values for regenerated and synthetic fibres? (4 marks)
- (iii) What would be the weights of a 10g dry sample of
- cotton
 - polyester fabric
- after storage in ambient conditions for several days? (2 marks)
- (c) The following table shows the effects of immersing some dry fibres in water and then determining swelling after immersion.

Fibre	Swelling (width %)	Swelling (length %)
Cotton	14.0	1.2
Silk	18.7	1.7
Viscose	26.0	3.5
Polyamide 66	5.0	1.2

Discuss

- why the value for the width-way swelling of polyamide 66 is much lower than those of the other fibres;
- why viscose has more length-way swelling than the others.

(9 marks)

- 2 (a) Discuss the benefits of blending natural and synthetic fibres for fabrics. Account for the fact that linen is difficult to blend well with other fibres. (9 marks)
- (b) Explain, with examples, why hollow fibres and filaments are used in duvets and thermal wear. (6 marks)
- (c) Explain why the sodium perborate present in many washing powders is described as an 'oxygen bleach'. (4 marks)
- (d) Describe how the flame retardents used for 100% cotton fabrics change the way cotton burns. (6 marks)

- 3 A range of fibre and fibre blend fabrics were made up into shirts and given to consumers to evaluate their comfort qualities in a 'wearer trial'. The fibres and blends used are shown in the table.

Fibre Content	Fabric Construction	SMR (%)	% Of Consumers Preferring The Shirt
55% wool/45% cotton	2/2 twill weave	11.5	7
100% silk	plain weave	12.5	32
100% polyamide	warp knit	3.8	3
85% polyester/ 15% cotton	warp knit	1.4	5
65% polyester 35% cotton	plain weave	2.7	30
100% cotton	plain weave	7.3	15
100% linen	plain weave	12.0	8

- (a) What is a 2/2 twill weave fabric? (2 marks)
- (b) List three properties of
- (i) weft knit fabrics (3 marks)
- (ii) warp knit fabrics. (3 marks)
- (c) Explain the reasons for the popularity or otherwise of the different shirts in the wearer trial. (12 marks)
- (d) Polyester/silk blends were not used in this trial because they were not available. Why should 50/50 blends of silk and polyester fibres be popular with consumers? (5 marks)

Turn over for the next question

Turn over ►

- 4 (a) Describe three different ways or treatments for making cotton resistant to wrinkling and creasing. *(6 marks)*
- (b) What are core-spun polyester/cotton yarns and sewing threads? Give the advantages of using them in garments. *(5 marks)*
- (c) What is meant by the term melt-spinning? Name three fibres which are produced by this process. *(5 marks)*
- (d) Describe in detail the nature of a wool fibre and explain how wool fabrics can shrink during washing. *(9 marks)*

END OF QUESTIONS