



Tutorial Letter 101/3/2018

Textiles: Fibres

CLO2601

Semesters 1 & 2

Department of Life and Consumer Sciences

This tutorial letter contains important information
about your module.

BARCODE

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Dear Student

1 INTRODUCTION

Welcome to **Textiles: Fibres (CLO2601)**. This module is presented in blended mode, i.e. the material is online and in print format. I hope that you will have a pleasant and fruitful academic year.

Please start working on your first assignment as soon as possible. This assignment must reach Unisa on or before the due date. If you have not submitted this assignment to reach Unisa on or before **16 March 2018 if you are registered for Semester 1 or 24 August 2018 if you are registered for Semester 2**, you will not be allowed to continue with your studies for this module.

You will find the following study material for this module on myUnisa under Official Study Material.

- Tutorial Letters 101, 301 and 302
- MO-001

You will receive a number of tutorial letters, such as this one, during the year. Your lecturers use tutorial letters to communicate with students about teaching, learning and assessment. The tutorial letters contain important information about the scheme of work, resources and assignments for this module. Please study each tutorial letter carefully in order to stay up to date with the information you require to complete this module successfully. Keep Tutorial Letter 101 at hand, so that you can refer to it when necessary as you work through the study material, prepare your assignments or direct questions to your lecturer.

Tutorial Letter 301 will guide you in searching for information and with regard to how to write in an academic style.

2 PURPOSE OF THE MODULE

From the moment we are born and wrapped up warmly in a cloth or blanket, textiles are part of our everyday lives.




As consumers, and more particularly as consumer scientists, we consider the selection and care of textiles to be important. Knowledge of fabric properties helps the consumer to make wise selections when purchasing textile products, as the properties of the fabric largely determine possible end-uses of the fabric. Knowledge of the care requirements for fabrics helps to ensure satisfaction after purchase, since correct care of textiles ensures an extended service life.

Consumers may obtain information about fabric properties from the salesperson, advertising brochures or labels (swing-tags). In addition, information on care can often be found on labels sewn onto the textile or obtained from washing machine and laundry product manufacturers. However, for the consumer scientist, this knowledge comes mainly through the study of textiles.

3 LECTURER AND CONTACT DETAILS

3.1 Lecturer

I am Ms Swart, your lecturer for this module. You may contact me with any enquiries regarding Textiles: Fibres (CLO2601).

 My telephone number	+2711 471 2550
 My postal address	CLO2601 Lecturer Unisa Department of Life and Consumer Sciences Science Campus, Calabash Building Private Bag X6 Florida 1710
 My e-mail address	swartn@unisa.ac.za

Please have your study material and student number handy if you contact me with queries concerning the course.

3.2 Department

The Department can be contacted on:

• Secretary's telephone number	+2711 471 2230
• Departmental fax number	+2711 471 2796

3.3 University

Follow the procedures in the brochure *Study @ Unisa* to register as a user on myUnisa. On the grey tab bar on the left-hand side of your computer screen, you will find the option **Course Contact**. You will be able to e-mail me via this option.

4 RESOURCES

4.1 Prescribed books

There is no prescribed textbook for this module.

4.2 Recommended books

If you would like to read and learn more about textiles, the following book is a very good choice that will serve as an excellent reference for many years to come:

- Collier, BJ. & Tortora, PG. 2008. *Understanding textiles*. 7th ed. New Jersey: Prentice Hall. ISBN: 978-0-13-118770-2. This book is available in the library.

4.3 Electronic reserves (e-reserves)

There are no e-reserves for this module.

5 STUDENT SUPPORT SERVICES

You will find information about student support services in *Study @ Unisa*.

6 STUDY PLAN

Below I have included a study plan for this module. Please note that this is only a guideline and, provided you meet the deadlines, you can work at your own pace.

However, by following this plan for the semester, you can be assured that your assignments will reach me on time and that you will be prepared for the examinations. Consult *Study @ Unisa* for general time management and planning skills.

7 PRACTICAL WORK AND WORK-INTEGRATED LEARNING

There are no practical sessions or work-integrated learning for this module.

8 ASSESSMENT

8.1 Assessment plan

There are two assignments and one examination per semester. You can be registered for either Semester 1 or Semester 2.

In this tutorial letter, you will find the assignments for:

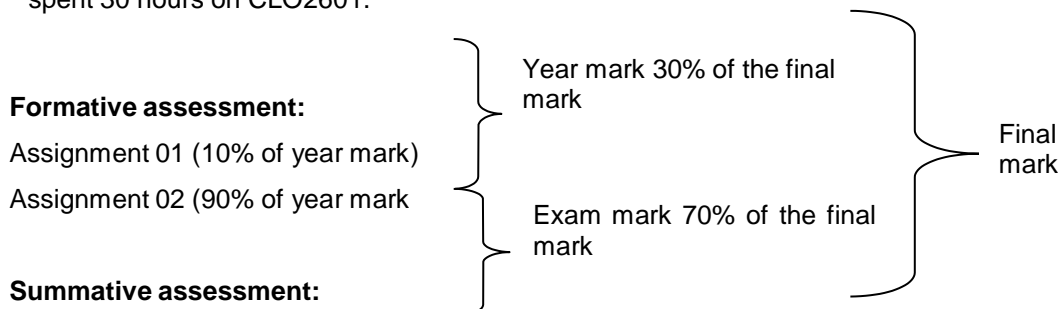
- **Semester 1** (January to June)
and
- **Semester 2** (July to December)

ACTIVITY	HOURS
Reading of all the chapters in MO-001	25
Completing the activities in the study guide	10
Preparation and submission of the assignments	25
Studying the recommended book and study guide and making summaries in preparation for your examinations	50
Final revision for the examination	10
TOTAL NUMBER OF HOURS	120

Summary of YOUR responsibilities for CLO2601

- Study each learning unit.
- Complete the assignments and submit them on or before the due date. In order to write the examination, you must submit Assignment 01 to reach Unisa either on or before the due date.
- Prepare for the examination.
- Write the examination.

This is a 12-credit module. That means that the average student working in his or her home language would need 120 hours of work to complete and pass the module. This includes time spent on completing assignments and studying for the examination. Starting immediately after registration closes, you will have to spend an average of 8 hours per week on this module. By the time you have submitted the first assignment you should already have spent 30 hours on CLO2601.



8.2 Assignment numbers

8.2.1 General assignment numbers

Assignments are numbered consecutively per module, starting from 01.

8.2.2 Unique assignment numbers

For each assignment, please fill in the unique assignment number in the space provided.

8.3 Due dates for assignments

Submit your assignments to reach Unisa on or before the following due dates:

Assignment number	FIRST SEMESTER		SECOND SEMESTER	
	Due date	Unique number	Due date	Unique number
01	16 March 2018	728394	24 August 2018	759075
02	6 April 2018	739519	10 September 2018	727984

8.4 Submission of assignments

The Department of Education has stipulated that the **first** assignment of each of your courses is **compulsory**. You will qualify for **examination admission** for a course only if you submit the first assignment by the due date. **If more than one assignment is set for a course, all the assignments for that course will be taken into consideration when calculating your year mark.** Therefore, to ensure a good year mark that can improve your final mark, submit all your assignments on time.

The assignments you are required to submit during the year must **reach Unisa on or before the due date**. If you are posting your assignment, please complete and post the assignment at least **two weeks** before the due date to ensure that we receive it on time. Assignments received after the due date will not be marked. In exceptional circumstances, a **valid** medical certificate stating that you have a long-term illness will be considered as a reason for submitting an assignment late. If you have a long-term illness, notify the lecturer of your circumstances well in advance. If you do not make any arrangements with your lecturer, the assignment will not be marked. Please attach the medical certificate to the back of your assignment.

How can students contact Unisa?

- **Unisa website** (<http://www.unisa.ac.za> & <http://mobi.unisa.ac.za>)

All study-related information is now available on the Unisa website in both web and mobi formats.

- **myUnisa** (<https://my.unisa.ac.za/portal> & <https://my.unisa.ac.za/portal/pda>)

Students can access their own information via the myUnisa website or mobi site.

- **E-mail** (info@unisa.ac.za)

Students may send an e-mail to info@unisa.ac.za for information on how to contact Unisa via e-mail.

- **SMS** (32695 – only for students in South Africa)

Students may send an SMS to 32695 for more information on how to contact Unisa via SMS. The sender will receive an auto response SMS with the various SMS options. The cost to the student per SMS is R1,00.

- **Fax** (012 429 4150)

Students may fax their enquiries to 012 429 4150. Enquiries will be forwarded to and processed by the relevant department.

Assignments sent by post should be addressed to:

The Registrar
PO Box 392
Unisa
0003

To submit an assignment via myUnisa:

1. Go to myUnisa.
2. Log in with your student number and password.
3. Select the module.
4. Click on **Assignments** in the menu on the left-hand side of the screen.
5. Click on the number of the assignment you wish to submit.
6. Follow the instructions.

For detailed information on submitting your assignments, please refer to *Study @ Unisa*.

8.5 List of assignments

Here is a list of the assignments for this module. Both assignments for each semester are compulsory. You will find the assignments themselves as addenda at the end of this tutorial letter.

First semester

Assignment 01

Assignment 02

Second semester

Assignment 01

Assignment 02

9 OTHER ASSESSMENT METHODS

There are no other assessment methods for this module.

10 EXAMINATION

For general information relating to examinations, consult *Study @ Unisa*. To gain **examination admission**, you must submit the first assignment for this module for the semester for which you are registered. The marks you obtain for both assignments for this module contribute to your year mark. In order to pass the module, you must obtain **a minimum examination mark of 50%**. If you obtain less than 50% for the examination, your year mark will not count towards your final mark, and only the examination mark will reflect on your academic record.

This module is offered over a semester period of 15 weeks. This means that if you are registered for the **first semester**, you will write the examination in **May/June 2018** and the supplementary examination in October/November 2018. If you are registered for the **second semester**, you will write the examination in **October/November 2018** and the supplementary examination in **May/June 2019**.

11 FREQUENTLY ASKED QUESTIONS

Please refer to *Study @ Unisa*, which contains an A–Z guide of the most relevant study information.

12 IN CLOSING

Wishing you every success in your studies during the year!

Yours sincerely

The Lecturer

Department of Life and Consumer Sciences

13 ADDENDA: ASSIGNMENTS

Assignments for Semester 1

Unisa
Department of Life and Consumer Sciences
Textile: Fibres
CLO2601
Semester code: 01

Assignment 01

DUE DATE: 16 March 2018

INSTRUCTIONS

- 1) Assignment 01 consists of multiple-choice questions only. Answer these questions on the mark-reading sheet provided.
- 2) Fill in all your **personal details** on the mark-reading sheet.
- 3) Fill in the **unique assignment number: 728394**
- 4) Indicate the correct answer clearly by shading the appropriate number on the mark-reading sheet with an HB pencil. If more than one number is shaded in any answer, **no** marks will be awarded for that question.
- 5) See *Study @ Unisa* for more detailed information on completing mark-reading sheets.

Multiple-choice questions

1 x 25 = [25]

- 1.1 Which fibre listed below leaves a hard, white bead when burnt?
1. acetate
 2. silk
 3. olefin
 4. glass
- 1.2 Fine wools can have as many as scales per centimetre.
1. 275
 2. 790
 3. 200
 4. 300
- 1.3 Which of the following is the oldest spinning process?
1. melt spinning
 2. dry spinning
 3. wet spinning
 4. gel spinning
- 1.4 are made by directly coupling two, usually different, reactive monomers to form the polymer, with the elimination of a by-product.
1. Block copolymers
 2. Natural polymers
 3. Condensation polymers
 4. Addition polymers
- 1.5 Lycocell is classified as a subcategory of
1. rayon.
 2. metallic fibre.
 3. triacetate.
 4. nylon.
- 1.6 A yarn composed of a number of filaments that are twisted together.
1. monofilament
 2. tow filament
 3. multifilament
 4. textured filament

1.7 The amount of light that the fibre reflects determines the

1. colour.
2. moisture absorption.
3. elasticity.
4. lustre.

1.8 The rapid movement of adsorbed moisture on the surface of a fibre is

1. resiliency.
2. wicking.
3. absorption.
4. adsorption.

1.9 are made of coupling two, usually different, reactive monomers, with the elimination of a small by-product.

1. Additional polymers
2. Block copolymers
3. Condensation polymers
4. Natural polymers

1.10 is a combing process that separates short fibres from long fibres, leaving the latter in parallel formation.

1. Hackling
2. Retting
3. Reeling
4. Weighting

1.11 Advantages of polyolefin include.

1. high durability and excellent resilience.
2. dyeing capacity.
3. shrinkage at temperature as low as 75°C.
4. comfort and heat sensitivity.

















1.12 is a manufactured fibre in which the fibre-forming substances are a long-chain synthetic polymer in which less than 85% of the amide linkages attach directly to two aliphatic groups.

1. Spandex
2. Nylon
3. Olefin
4. Modacrylic

1.13 A planar structure produced by the interlacing units in processes such as weaving and knitting is called a

1. yarn.
2. fibre.
3. fabric.
4. filament fibre.

1.14 Which of the following set of symbols is the most applicable for acrylic curtains?

1.    
2.    
3.    
4.    

1.15 This inorganic fibre is obtained from a natural source such as rock.

1. mineral fibre
2. asbestos
3. metallic fibre
4. glass

1.16 An advantage of acrylic over wool for curtains is that

1. acrylic has better sunlight resistance than wool.
2. acrylic can be dry-cleaned.
3. acrylic is more durable than wool.
4. acrylic is more expensive than wool.

1.17 The degree of polymerisation influences

1. fibre abrasion resistance.
2. fibre flexibility.
3. fibre strength.
4. fibre moisture absorption.

1.18 Butcher's linen is made from 100% filament fibre.

1. cotton
2. polyester
3. wool
4. polyamide

1.19 What is the trade name for Spandex?

1. rubber
2. polyurethane
3. lycra
4. elastic

1.20 is known as the growth and production of silk.

1. Sericulture
2. Bombyx mori
3. Throwing
4. Reeling

1.21 These fibres are composed of metal, plastic-coated metal – coated plastic, or a fibre core completely covered by metal.

1. mineral fibres
2. elastomeric fibres
3. acrylic fibres
4. metallic fibres

1.22 Soybean protein fibres are spun by means of a ... process.

1. gel spinning
2. dry spinning
3. melt spinning
4. wet spinning

1.23 In this process, carbon disulphide is added to convert the cellulose into a form that is soluble in caustic soda. This forms the viscose dope.

1. shredding and aging
2. alkalisation and pressing
3. xanthation and solvation
4. carding

1.24 A/an helps to identify products produced in an environmentally friendly way.

1. care label
2. eco-label
3. brand label
4. special label

1.25 This fibre is obtained from a coconut.

1. pina
2. coir
3. sisal
4. abaca

TOTAL: [25 MARKS]

- END OF ASSIGNMENT 01-

Unisa
Department of Life and Consumer Sciences
Textile: Fibres
CLO2601
Semester code: 01

Assignment 02

DUE DATE: 6 April 2018

INSTRUCTIONS

- 1) Type your assignment on a computer. You may print it on ordinary white paper – you do not need to use the Unisa typing paper provided. Please use 1.5 spacing and Arial or a similar font in 11 or 12 point size. Leave a line open between questions. I will not mark a typed assignment that does not comply with these requirements. If you are not able to type your assignment, submit a handwritten assignment. Use a black or blue pen, and please write neatly.
- 2) Your student number is the number just below your address. You must fill in this number on the assignment cover and quote it in all correspondence with the university.
- 3) You need to study all the work in your study guide to complete Assignment 02. You will find that the questions in this assignment consist mainly of the application of your theoretical knowledge.
- 4) **Do not wait until the last weekend before the due date before you start with this assignment. Some questions need preparation beforehand.**
- 5) Answer all the questions as concisely and clearly as possible.
- 6) Read every question carefully to make sure you know what is required of you.
- 7) To complete this assignment, you will need to think about and interpret the information in the study guide.
- 8) The marks allocated to the questions give you the freedom to answer the questions creatively, in accordance with your individual insight, while being accurate as far as facts are concerned.
- 9) Number your answers correctly.
- 10) Fill in the **unique assignment number: 739519**.

QUESTION 1 – Textiles, fibre theory and fibre properties**[20]**

1.1 Classify the following fibres according to the TFPIA classification, giving the main group and sub-division and, where applicable, the sub-category in which the fibre is placed. (8)

1.1.1 Viscose

1.1.2 Rabbit

1.1.3 Hemp

1.2 This question refers to the composition of textile fibres. (9)

Fill in the missing words. Number your answers as indicated.

The diameter of fibres, often referred to as **1.2.1**, has a great influence on the **1.2.2** properties of a fabric. Fineness is a relative measure of fibre size expressed in **1.2.3** or **1.2.4** (linear density) for manufactured fibres. Tex is equal to the mass in grams of **1.2.5** metres of the fibre or yarn. Denier is equal to the mass in grams of **1.2.6** meters of the fibre or yarn. For **1.2.7**, fineness may be expressed as the mean fibre weight in micrograms per inch. For **1.2.8**, fineness is the mean fibre width or mean fibre diameter expressed in **1.2.9**.

1.3 Indicate whether each of the following statements is **true** or **false**. (3)

1.3.1 Nylon is less abrasion resistant than rayon.

1.3.2 Polyethylene has a lower density than water.

1.3.3 Acrylic fibres are weaker than wool fibres.

QUESTION 2 – Natural and green fibres**[25]**

2.1 Differentiate between the different retting processes used for flax by describing, comparing and contrasting the processes. (12)

- 2.2 Discuss the properties that make soybean fibre desirable for textile use. (5)
- 2.3 Compare the strength, flexibility and elongation properties of flax and wool. (8)

QUESTION 3 – Manufactured fibres

[20]

Note the mark allocated to each question.

- 3.1 What is the generic name for a polymer that is composed of at least 85% by weight of acrylonitrile unites? (1)
- 3.2 Polyester is oelophilic. What does oelophilic mean, and what is the consequence of this property during laundering? (3)
- 3.3 Discuss why glass fibres are not really suitable for textile use. (5)
- 3.4 Considering durability and appearance retention, give six reasons why rayon would not be suitable for a shirt. (6)
- 3.5 Although acrylic was developed in an attempt to improve rayon, it became a replacement for wool. Discuss four advantages of acrylic yarns over wool. (4)
- 3.6 Name one thing polypropylene fibres are used for? (1)

QUESTION 4 – Fabric labelling, care and choice for use**[35]**

- 4.1 Provide the care labelling symbols for the following instructions: (3)
- 4.1.1 The article should be hand washed.
- 4.1.2 The article should be washed at 40 °C.
- 4.1.3 No chlorine bleach should be used on the article.
- 4.2 Give four examples of fibre blends and an example of where or why they are used. (4)
- 4.3 You are the owner of a boutique specialising in ladies' clothing. You would like to include the following ladies' smart blouse style into your current winter range.



Figure 1: <https://www.farfetch.com/>

- 4.3.1 Conduct an analysis of the textile requirements for the **ladies' smart blouse**. Which **properties** should the fibre have and **why** should it have these properties? (14)
- 4.3.2 Suggest suitable fibres that will meet the requirements you identified in 4.3.1. Limit yourself to **two** different fibres. Clearly show how the properties of the fibre meet the requirements. If the fibre you have chosen does not possess that property, you must state why you are willing to forfeit it. (14)

Remember that you must give **reasons** for your answers to both sub-questions. Answer both 4.3.1 and 4.3.2 under the following headings:

- Durability
- Comfort
 - Moisture absorption
 - Heat conductivity
- Appearance retention
 - Resiliency
 - Dimensional stability
- Care
- Other considerations
 - Hand/ texture/drapeability
 - Price

TOTAL: [100 MARKS]

- END OF ASSIGNMENT 02-

Assignments for Semester 2

Unisa
Department of Life and Consumer Sciences
Textile: Fibres
CLO2601
Semester code: 02

Assignment 01

DUE DATE: 24 August 2018

INSTRUCTIONS

- 1) Assignment 01 consists of multiple-choice questions only. Answer these questions on the mark-reading sheet provided.
- 2) Fill in all your **personal details** on the mark-reading sheet.
- 3) Fill in the **unique assignment number: 759075**.
- 4) Indicate the correct answer clearly by shading the appropriate number on the mark-reading sheet with an HB pencil. If more than one number is shaded in any answer, **no** marks will be awarded for that question.
- 5) See *Study @ Unisa* for more detailed information on completing mark-reading sheets.

QUESTION 1: Multiple choice

1 x 25 = [25]

1.1 Coarse wool fibres have scales per cm.

1. 275
2. 300
3. 790
4. 970

1.2 Polyester fibres can be produced by spinning.

1. dry
2. melt
3. melt and wet
4. wet and dry

1.3 A is not considered as a textile

1. wool jersey
2. cotton dress
3. leather
4. polyester scarf

1.4 The name that manufacturers give to identify products.

1. trade
2. generic
3. manufacturer's
4. common

1.5 Wool fibres are easily damaged by

1. sulphuric acid.
2. sunlight.
3. alkali.
4. dry-cleaning solvents.

1.6 Hackling is a process used in the production of fibres.

1. cotton
2. flax
3. cotton lint
4. rayon

- 1.7 The very strong bright white polyethylene fibre is known by the trade name
1. trevira.
 2. spectra.
 3. tencil.
 4. orlon.
- 1.8 Olefin fibres have largely taken over the markets once dominated by
1. nylon.
 2. cotton and flax.
 3. wool and silk.
 4. jute and sisal.
- 1.9 A product capable of being woven, knitted or made into fabrics using other methods is known as a
1. textile fibre.
 2. yarn.
 3. fabric.
 4. nonwoven.
- 1.10 A bicomponent fibre that is composed of two generic fibre types is a
1. multifilament.
 2. bigeneric fibre.
 3. tow.
 4. bicomponent fibre.
- 1.11 What is the trade name for Spandex?
1. lycra
 2. rubber
 3. polyurethane
 4. elastic
- 1.12 are made by directly coupling two, usually identical, reactive monomers to form the polymer, without a by-product.
1. Block copolymers
 2. Condensation polymers
 3. Natural polymers
 4. Addition polymers

1.13 A process by which staple fibres are sorted, separated and partially aligned is

1. combing.
2. woollen yarn.
3. worsted yarn.
4. carding.

1.14 A single strand (filament) of silk thread is known as

1. serion.
2. fibrion.
3. bave.
4. brin.

1.15 Nanofibres can be produced

1. by electrospinning and from bicomponent fibre.
2. from bicomponent fibres and gel spinning.
3. by electrospinning and gel spinning.
4. by gel spinning.

1.16 An advantage of acrylic over wool for curtains is that

1. acrylic has better sunlight resistance than wool.
2. acrylic can be dry-cleaned.
3. acrylic is more durable than wool.
4. acrylic is more expensive than wool.

















1.17 Wild silk is also known as silk.

1. dupion
2. tussah
3. mopane
4. shantung

1.18 The degree of polymerisation influences

1. fibre moisture absorption.
2. fibre strength.
3. fibre flexibility.
4. fibre abrasion resistance.

1.19 Which of the following set of symbols is the most applicable for acrylic curtains?

1.    
2.    
3.    
4.    

1.20 The most important property of modacrylic fibres is that they

1. are flammable.
2. are exceptionally strong.
3. are resistant to abrasion.
4. do not support combustion.

1.21 Spandex is used in textiles

1. for decoration.
2. to give elasticity.
3. to reduce flammability.
4. to reduce static electricity.

1.22 A(n) helps to identify products produced in an environmentally friendly way.

1. care label
2. eco-label
3. brand label
4. special label

1.23 The ability of a fibre to return to shape after bending, stretching or flattening is known as

1. elasticity.
2. resiliency.
3. flexibility.
4. thermoplasticity.

1.24 Bamboo Kun is a(n)

1. additive.
2. natural antibacterial and antifungal agent.
3. type of bamboo fibre.
4. synthetic antibacterial and antifungal agent.

1.25 In a summer blouse, polyester's would be an advantage.

1. moisture absorption
2. thermoplastic nature
3. tendency to pill
4. resiliency

TOTAL: [25 MARKS]

- END OF ASSIGNMENT 01-

Unisa
Department of Life and Consumer Sciences
Textile: Fibres
CLO2601
Semester code: 02

Assignment 02

DUE DATE: 10 September 2018

INSTRUCTIONS

- 1) Type your assignment on a computer. You may print it on ordinary white paper – you do not need to use the Unisa typing paper provided. Please use 1.5 spacing and Arial or a similar font with 11 or 12 point size. Leave a line open between questions. I will not mark a typed assignment that does not comply with these requirements. If you are not able to type your assignment, submit a handwritten assignment. Use a black or blue pen, and please write neatly.
- 2) Your student number is the number just below your address. You must fill in this number on the assignment cover and quote it in all correspondence with the university.
- 3) You need to study all the work in your study guide to complete Assignment 02. You will find that the questions in this assignment consist mainly of the application of your theoretical knowledge.
- 4) **Do not wait until the last weekend before the due date to start with this assignment. Some questions need preparation beforehand.**
- 5) Answer all the questions as concisely and clearly as possible.
- 6) Read every question carefully to make sure you know what is required of you.
- 7) To complete this assignment, you will need to think about and interpret the information in the study guide.
- 8) The marks allocated to the questions give you the freedom to answer the questions creatively, in accordance with your individual insight, while being accurate as far as facts are concerned.
- 9) Number your answers correctly.
- 10) Fill in the **unique assignment number: 727984.**

QUESTION 1 – Textiles, fibre theory and fibre properties

[20]

1.1 Classify the following fibres according to the TFPIA classification, giving the main group and sub-division, and, where applicable, the sub-category under which the fibre is grouped. (9)

1.1.1 Camel

1.1.2 Sisal

1.1.3 Nylon

1.1.4 Triacetate

1.2 This question refers to the diameter of textile fibres. (8)

Fill in the missing words. Number your answers as indicated.

All fibres, whether they are from animals or plants or are manufactured, are constructed from **1.2.1**. These polymers can be naturally formed, as is the case of wool fibres, which are composed of the polymer **1.2.2**, which is composed of amino acid monomers, or manufactured from monomers obtained from sources such as trees or petroleum. The bulk of the fibre is constructed from bundles of **1.2.3**. The individual fibrils are made from **1.2.4**. In plant fibres, the polymers are primarily those of **1.2.5**. In animal fibres, they are proteins: keratin in wool, mohair and fur, and **1.2.6** in silk. The fibre bulk contains two different arrangements of the polymers: **1.2.7** (having no defined shape) and **1.2.8** (in the form of crystals).

1.3 What are the effects of the drawing operation on polymer filaments? (3)

QUESTION 2 – Natural and green fibres

[25]

2.1 In the production of organic cotton, what changes are made to common practices to minimise the environmental impact of growing the cotton? (3)

2.2 Briefly discuss the fibre production of wool before the fibres can be spun into yarn. (8)

2.3 Compare the comfort (moisture absorption and heat conductivity) properties of wool and silk. (10)

2.4 Indicate whether each of the following statements is **true** or **false**. (4)

2.4.1 Lycocell has good drape, poor moisture absorbency, and accepts dyes well.

2.4.2 Silk will not be damaged by alkalis.

2.4.3 Wool fibres are weaker when wet.

2.4.4 In the production of flax fibres, retting refers to the outer woody portion that must be rotted away before the fibres can be obtained.

QUESTION 3 – Manufactured fibres

[20]

Note the mark allocated to each question.

3.1 What is the generic name for a polymer in which the fibre-forming substance is any long-chain synthetic polymer composed of at least 85% by weight of acrylonitrile units? (1)

3.2 Acetate and triacetate differ from rayon in that they are thermoplastic. What does “thermoplastic” mean, and what is both the advantage and disadvantage of this property for acetate and triacetate fibres? (3)

3.3 Discuss one reason why olefin fibres are not really suitable for everyday garment use. (1)

3.4 Although acrylic was developed from an attempt to improve rayon, it became a replacement for wool. Discuss four advantages of acrylic yarns over wool. (4)

3.5 Nylon and polyester have very similar properties in terms of durability, appearance retention and comfort. Compare the effect of alkalis, acids, sunlight and biological properties of the two fibres. (8)

3.6 Mineral fibres can also be manufactures. Name three manufactured mineral fibres? (3)

QUESTION 4 – Fabric labelling, care and choice for use

[35]

4.1 Illustrate the care labelling symbols for the following instructions: (3)

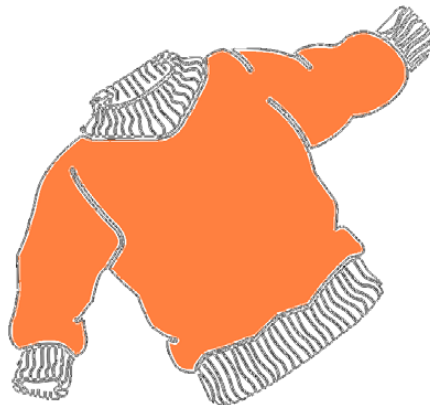
4.1.1 Chlorine bleach may not be used

4.1.2 Do not wash

4.1.3 Iron with a warm iron (160°C)

4.2 Give four reasons why fibres are blended. (4)

4.3 You are the owner of a boutique specialising in children’s clothing. You would like to include the following boys’ jersey style into your current range.



4.3.1 Conduct an analysis of the textile requirements for the **boys’ jersey**. Which **properties** should the fibre have, and **why** should it have these properties?

(14)

4.3.2 Suggest suitable fibres that will meet the requirements you identified in 4.3.1. Limit yourself to **two** different fibres. Clearly show how the properties of the fibre meet the requirements. If the fibre you have chosen does not possess that property, you must state why you are willing to forfeit it.

(14)

Remember that you must give **reasons** for your answer for both sub-questions. Answer both 4.3.1 and 4.3.2 under the following headings:

- Durability
- Comfort
 - Moisture absorption
 - Heat conductivity
- Appearance retention
 - Resiliency
 - Dimensional stability
- Care
- Other considerations
 - Hand/ texture/ drapeability
 - Price

TOTAL: [100 MARKS]

- END OF ASSIGNMENT 02-