

**Candidate Identifier Number:** \_\_\_\_\_

**UCL Language Centre English for Academic Purposes (In-Sessional) Course**

**Spring Term 2006**

**Listening Examination: Lecture**

*Time allowed 50 minutes*

**COTTON**

Before the lecture begins you will have 10 minutes to read this document. During the lecture you should complete the questions according to the instructions given. After the lecture you will have 10 minutes to check through the answers.

Please note that no questions will be asked during the Introduction.

[The marks available for each question are in brackets, *for example* (2), at the right hand side of the page at the end of each question.]

**I INTRODUCTION**

No questions

**II KEY HISTORICAL DATES**

1. Add the *date or dates* for these key events:

events \_\_\_\_\_ date(s) \_\_\_\_\_

The industrial revolution

Continuation of slavery in the USA

The beginning of the American Civil War

The drying up of the Aral Sea (6)

**III PARTS OF THE COTTON PLANT AND THEIR USES**

2. The two main parts of the cotton plant are the \_\_\_\_\_ and the \_\_\_\_\_ (2)

3. Oil from cotton is used both in \_\_\_\_\_ and also in \_\_\_\_\_ and \_\_\_\_\_. (3)

4. Draw arrows to link the type of fibre on the left with its description and use on the right:

first-cut fibre	short	chemicals & food
second-cut fibre	long	furniture & mattresses

(2)

5. Which of the following uses for lint fibres is **not** mentioned. Circle one only.

Ice-cream	toothpaste	salad dressing
cord jeans	car tyres	plastic strengtheners

(2)

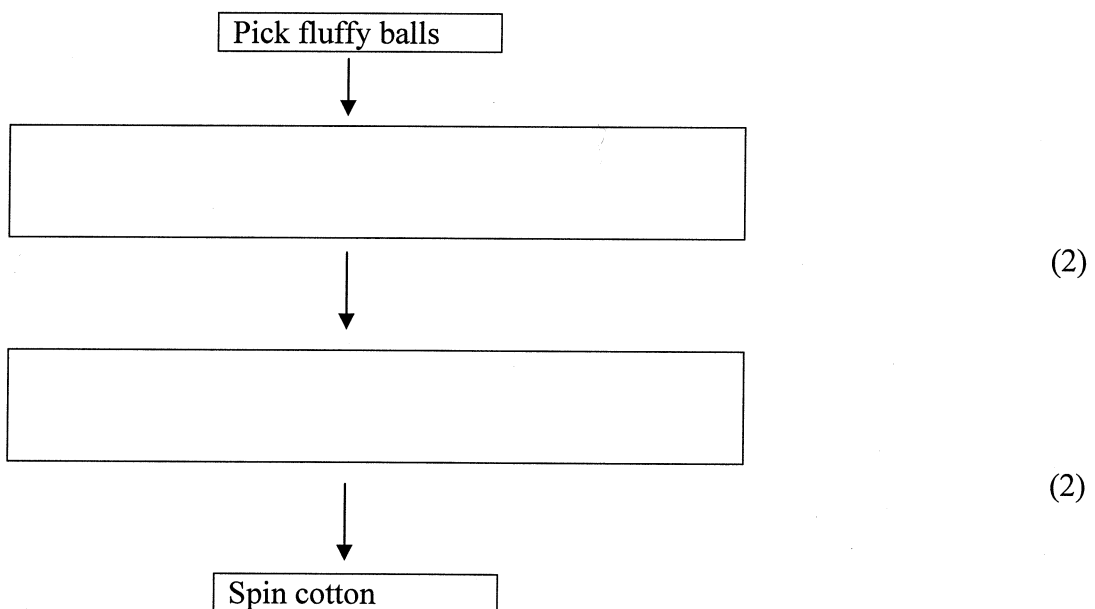
#### IV HISTORY OF THE PRODUCTION OF COTTON CLOTH

6. Two thousand years ago, babies born into wealthy families would have been wrapped in: Circle one answer.

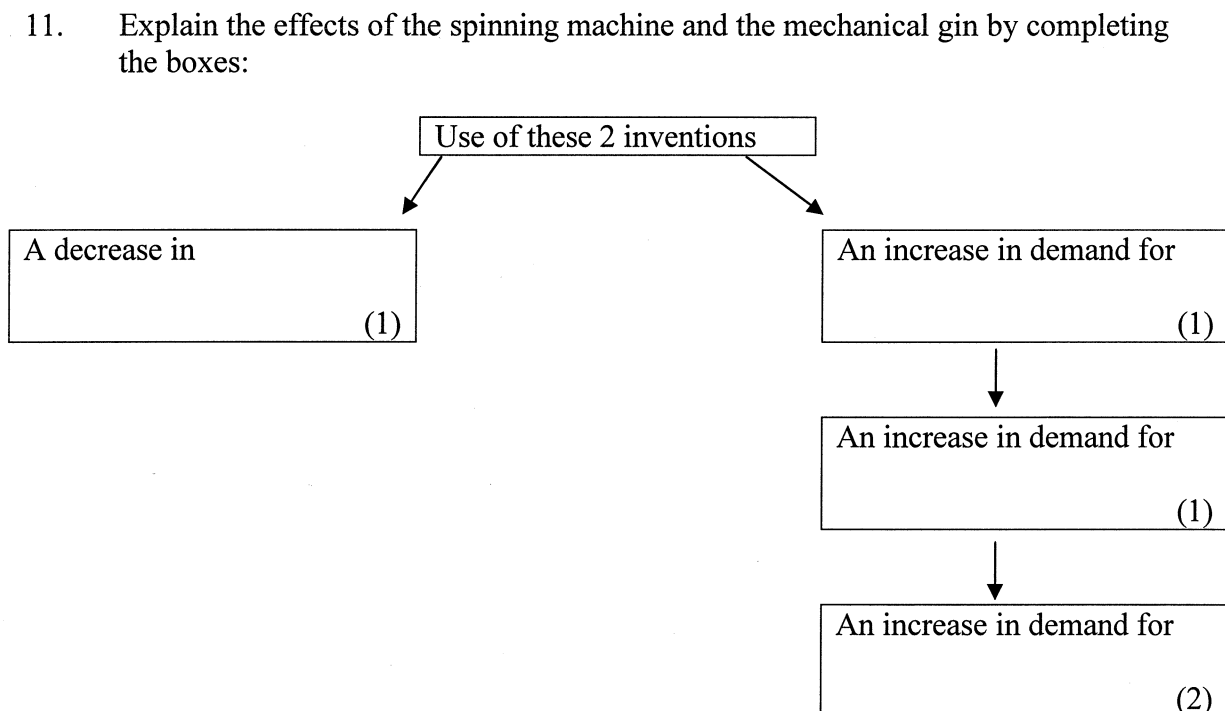
Linen	Cotton	Silk
-------	--------	------

(1.5)

7. Explain the process of making cotton:



8. Why was cotton more expensive to produce than wool in the mid 18<sup>th</sup> century?  
Circle one answer
- a) it took 14 days to produce it
  - b) it took longer to produce the same weight
  - c) the raw material was much more expensive than the finished product
  - d) more men wanted to wear it
- (2)
9. How many kilograms of cotton were produced in 1765? Circle one answer.
- a) 250
  - b) 2,500
  - c) 25,000
  - d) 250,000
- (2)
10. In the USA, before Eli Whitney's invention of a mechanical gin, one man would produce: Circle one answer.
- a) Less than half a kilo of cotton a day
  - b) Exactly half a kilo of cotton a day
  - c) More than half a kilo of cotton a day
- (1.5)



12. The UK population in the UK between 1750 and 1820 grew by approximately: Circle one answer.

50%                      100%                      200%                      (1.5)

13. Name **ONE** of the crops that cotton replaced as the most traded product in the world.

\_\_\_\_\_ (1)

14. At the start of the American Civil War, cotton was the main crop of: Circle one answer.

The southern states                      The northern states                      (1)

15. Which states were victorious in the American Civil War? Circle one answer.

The southern states                      The northern states                      (1)

16. By 1861 two-thirds of **raw** cotton was being **produced** in: Circle one answer.

The United States                      Lancashire                      China                      Detroit                      (2)

## V COTTON PRODUCTION TODAY

17. How much of all global fibre requirements does cotton provide? Circle one answer

25%                      50%                      40%                      75%                      (2)

18. Name **TWO** of the positive personal effects of the widespread use of cotton

(i) \_\_\_\_\_ (2)

(ii) \_\_\_\_\_ (2)

19. Name **TWO** of the negative effects of the widespread production of cotton
- (i) \_\_\_\_\_ (2)
- (ii) \_\_\_\_\_ (2)

## VI PROBLEMS AND PRESSURES IN COTTON PRODUCTION

20. The cotton plant can grow: Circle your answer
- a) Almost anywhere with water
- b) In only 50 countries in the world
- c) Only near the sea
- d) Only commercially (2)
21. Which of the following countries was **not** mentioned as a **big** producer of cotton?  
Circle one answer only.
- |          |                   |              |            |
|----------|-------------------|--------------|------------|
| Pakistan | India             | Turkmenistan | Uzbekistan |
| Turkey   | The United States | China        | (2)        |
22. Which country is the biggest **exporter** of cotton?
- \_\_\_\_\_ (1)
23. Which country is the biggest **producer** of cotton?
- \_\_\_\_\_ (1)
24. Countries in West Africa receive huge subsidies for cotton production. Circle one answer:
- |      |       |     |
|------|-------|-----|
| True | False | (1) |
|------|-------|-----|

25. In the World Trade Organisation meeting in Cancun, Mexico, the 4 West African countries: Circle one answer

- a) got American subsidies of 3 billion dollars a year.
- b) got a lot of sympathy from the American negotiators.
- c) refused to negotiate with the rich world
- d) were lifted out of poverty by the World Bank

(2)

## VII COTTON PRODUCTION AND THE ENVIRONMENT

26. Explain how the man-made disaster in the Uzbek Republic occurred:

Cotton requires:



The Soviets diverted:



The Aral Sea became:

(1)

(1)

(1)

27. The percentage of pesticides used on cotton crops in the world in 1994 was:  
Circle one answer:

2.4%

3.5%

24%

35%

(2)

28. Complete the gaps: “each year \_\_\_\_\_ million people drink water \_\_\_\_\_  
with pesticides” (2)
29. The organisation *Sustainable Cotton* claims that pesticides can:  
Circle the **one** which is not true.
- cause brain damage                      harm unborn babies                      cause cancer  
hurt the immune system                      be used more widely (2)
30. The world annual expenditure on pesticides is: Circle one answer  
\$26 million                      \$26 billion                      \$26 trillion (1.5)
31. Name one country where genetically modified cotton has been increasingly planted  
\_\_\_\_\_ (1)
32. What percentage of cotton crops was genetically modified in the USA in 2001?  
\_\_\_\_\_ (1)
33. According to those in favour of genetic engineering for crops, which **two** of the  
following are true: Circle two answers
- a) It improves their appearance  
b) It involves the use of more pesticides  
c) It is less harmful to the environment  
d) gives economic benefits to the farmers (2)

## VIII CONCLUSION

34. The lecturer's **final** point in this lecture is: Circle one answer
- a) cotton has a negative environmental impact
  - b) cotton has a long and complex history
  - c) cotton is very important to many economies
  - d) cotton can act as a model for understanding a range of products (2)

Total: 73 marks

**This is the end of the listening examination. You now have 10 minutes to check your answers carefully**



Candidate Identifier Number: \_\_\_\_\_ **\*\*ANSWERS\***

UCL Language Centre English for Academic Purposes (In-Sessional)

Spring Term 2006

Listening Examination: Lecture

*Time allowed 50 minutes*

## **COTTON**

Before the lecture begins you will have 10 minutes to read this document. During the lecture you should complete the questions according to the instructions given. After the lecture you will have 10 minutes to check through the answers.

Please note that no questions will be asked during the Introduction.

[The marks available for each question are in brackets, *for example* (2), at the right hand side of the page at the end of each question.]

### **I INTRODUCTION**

No questions

### **II KEY HISTORICAL DATES**

1. Add the *date or dates* for these key events:

<u>events</u>	<u>date(s)</u>	
The industrial revolution	1750-1820	(1750=1;1820=1)
Continuation of slavery in the USA	1810-1860	(1810=1;1860=1)
The beginning of the American Civil War	1861	
The drying up of the Aral Sea	1960s	(1960 = ½) (6)

### **III PARTS OF THE COTTON PLANT AND THEIR USES**

2. The two main parts of the cotton plant are the lint / fibre and the seed. (2)
3. Oil from cotton is used both in foods (food=1/2) and also in soap (soaps=1/2) and plastics (plastic=1/2). (3)

4. Draw arrows to link the type of fibre on the left with its description and use on the right:

<u>first-cut fibre</u>	short	chemicals & food	
second-cut fibre	<u>long</u>	<u>furniture &amp; mattresses</u>	(2)

5. Which of the following uses for lint fibres is **not** mentioned. Circle one only.

Ice-cream	toothpaste	salad dressing	
<u>cord jeans</u>	car tyres	plastic strengtheners	(2)

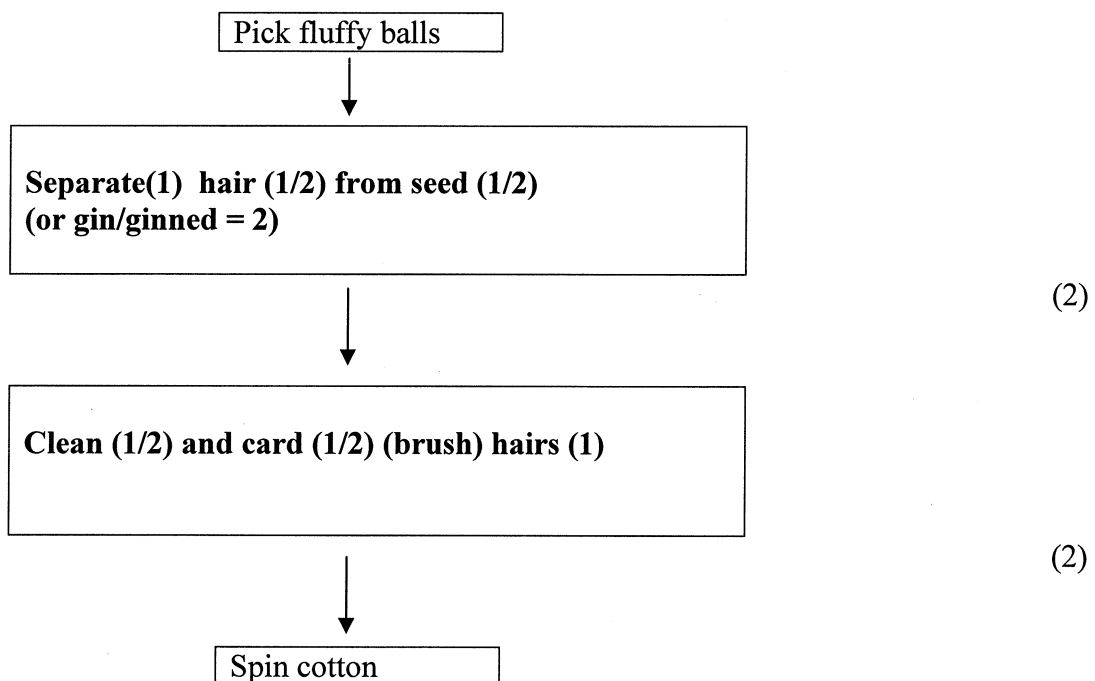
NB. If underline 2, give 1 mark (as car tyres slightly unclear; text="automobile tyre cords.")

#### IV HISTORY OF THE PRODUCTION OF COTTON CLOTH

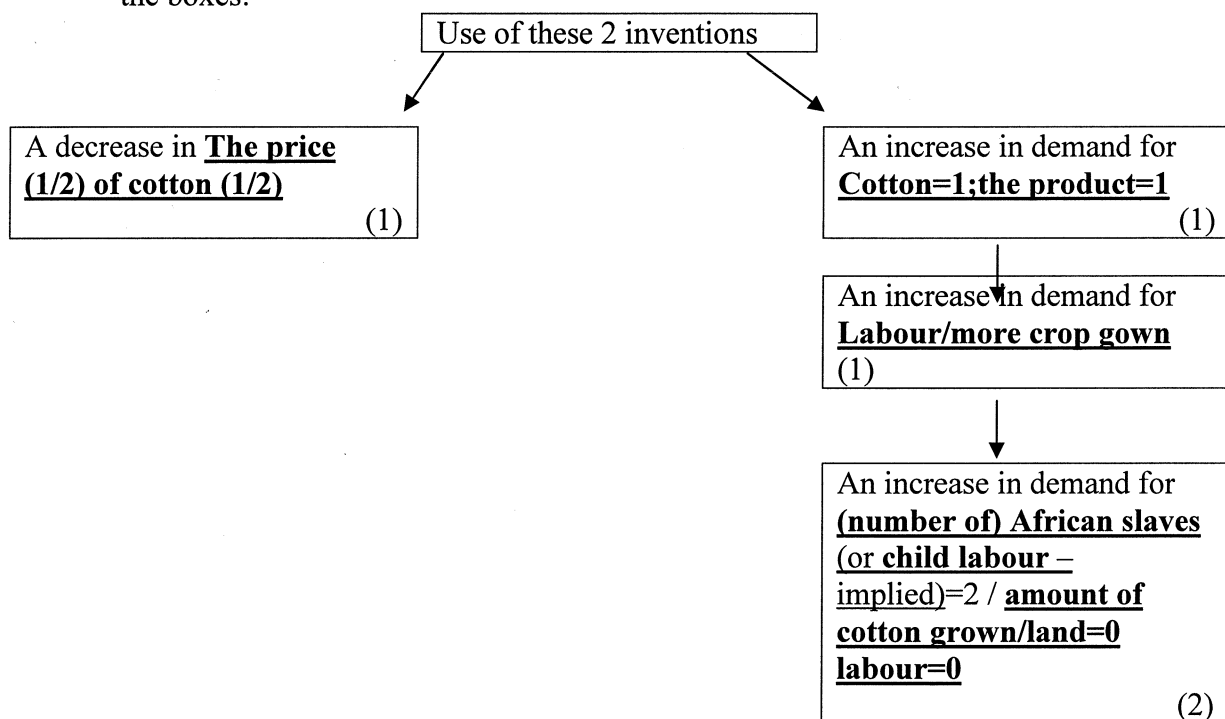
6. Two thousand years ago, babies born into wealthy families would have been wrapped in: Circle one answer.

Linen	<u>Cotton</u>	Silk	(1.5)
-------	---------------	------	-------

7. Explain the process of making cotton:



8. Why was cotton more expensive to produce than wool in the mid 18<sup>th</sup> century?  
Circle one answer
- a) it took 14 days to produce it
- b) **it took longer to produce the same weight**
- c) the raw material was much more expensive than the finished product
- d) more men wanted to wear it (2)
9. How many kilograms of cotton were produced in 1765? Circle one answer.
- a) 250
- b) 2,500
- c) 25,000
- d) **250,000** (2)
10. In the USA, before Eli Whitney's invention of a mechanical gin, one man would produce: Circle one answer.
- a) **Less than half a kilo of cotton a day**
- b) Exactly half a kilo of cotton a day
- c) More than half a kilo of cotton a day (1.5)
11. Explain the effects of the spinning machine and the mechanical gin by completing the boxes:



12. The UK population in the UK between 1750 and 1820 grew by approximately: Circle one answer.

50%                      100%                      200%                      (1.5)

13. Name **ONE** of the crops that cotton replaced as the most traded product in the world.

sugar=1 or tobacco = 1 (1)

14. At the start of the American Civil War, cotton was the main crop of: Circle one answer.

The southern states                      The northern states                      (1)

15. Which states were victorious in the American Civil War? Circle one answer.

The southern states                      The northern states                      (1)

16. By 1861 two-thirds of **raw** cotton was being **produced** in: Circle one answer.

The United States                      Lancashire                      China                      Detroit                      (2)

## V COTTON PRODUCTION TODAY

17. How much of all global fibre requirements does cotton provide? Circle one answer

25%                      50%                      40%                      75%                      (2)

18. Name **TWO** of the positive personal effects of the widespread use of cotton

Any 2 of the following: better/improved/increased = 1; hygiene=1/improved human living =2 / increased/improved = 1; comfort =1 (allow also: cheaper clothing =1) easy to wash and rewear = 2(2)

19. Name **TWO** of the negative effects of the widespread production of cotton

(i)/(ii) any 2 of the following pairs: (2 marks per pair)

exploitation=1 of workers=1 / unequal treatment =1 in the developing world =1 /

environmental = 1 damage = 1 / child = 1 labour = 1 / long working hours = 1 /affect

production of other crops=2 (i) (2) (ii) (2)

## VI PROBLEMS AND PRESSURES IN COTTON PRODUCTION

20. The cotton plant can grow: Circle your answer

a) Almost anywhere with water

b) In only 50 countries in the world

c) Only near the sea

d) Only commercially (2)

21. Which of the following countries was **not** mentioned as a **big** producer of cotton?

Circle one answer only.

Pakistan

India

Turkmenistan

Uzbekistan

Turkey

The United States

China

(2)

22. Which country is the biggest **exporter** of cotton?

The United States (US/USA) (1)

23. Which country is the biggest **producer** of cotton?

China (1)

24. Countries in West Africa receive huge subsidies for cotton production. Circle one answer:

**True**

**False**

(1)

25. In the World Trade Organisation meeting in Cancun, Mexico, the 4 West African countries: Circle one answer

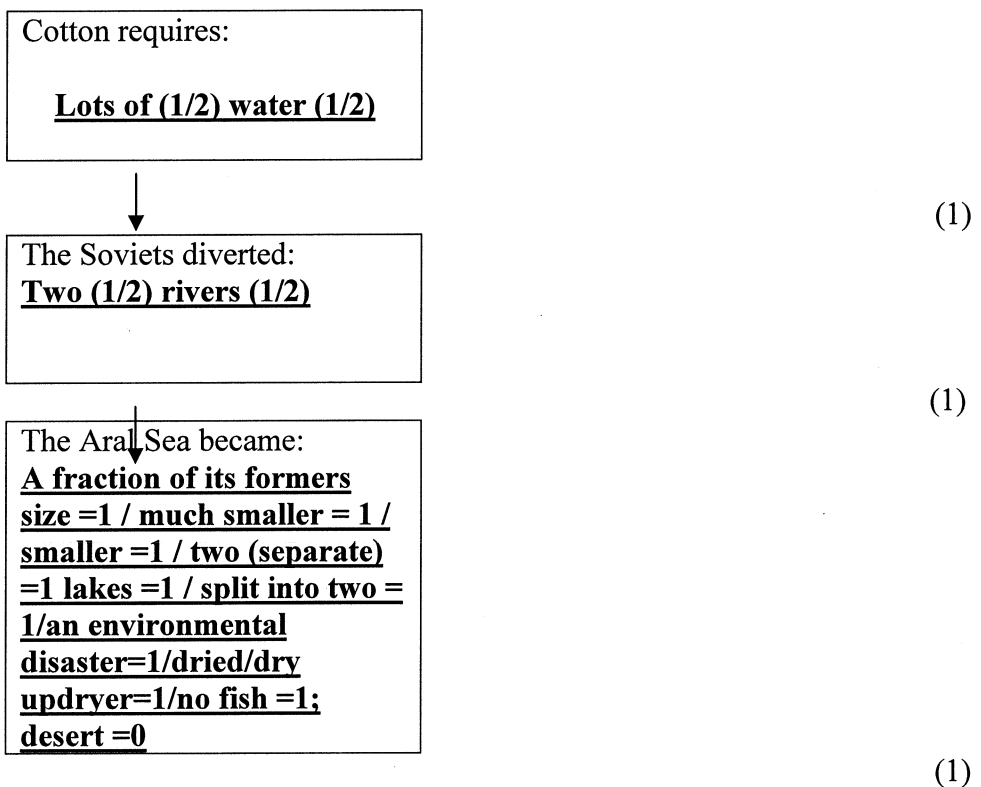
- a) got American subsidies of 3 billion dollars a year.
- b) got a lot of sympathy from the American negotiators.

**c) refused to negotiate with the rich world**

d) were lifted out of poverty by the World Bank (2)

## VII COTTON PRODUCTION AND THE ENVIRONMENT

26. Explain how the man-made disaster in the Uzbek Republic occurred:



27. The percentage of pesticides used on cotton crops in the world in 1994 was:  
Circle one answer:

2.4%      3.5%      **24%**      35%      (2)

28. Complete the gaps: “each year 14 million people drink water contaminated (contaminate/s/ing =1/2) with pesticides” (2)
29. The organisation *Sustainable Cotton* claims that pesticides can:  
Circle the **one** which is not true.
- cause brain damage                      harm unborn babies                      cause cancer
- hurt the immune system                      be used more widely (2)
30. The world annual expenditure on pesticides is: Circle one answer
- \$26 million                      \$26 billion                      \$26 trillion (1.5)
31. Name one country where genetically modified cotton has been increasingly planted
- The United States (USA/US) / Australia (1)
32. What percentage of cotton crops was genetically modified in the USA in 2001?
- 64% / 64 (1)
33. According to those in favour of genetic engineering for crops, which **two** of the following are true: Circle two answers
- a) It improves their appearance
- b) It involves the use of more pesticides
- c) It is less harmful to the environment
- d) gives economic benefits to the farmers (2)

## VIII CONCLUSION

34. The lecturer's **final** point in this lecture is: Circle one answer

- a) cotton has a negative environmental impact
- b) cotton has a long and complex history
- c) cotton is very important to many economies
- d) cotton can act as a model for understanding a range of products (2)

Total: 73 marks

**This is the end of the listening examination. You now have 10 minutes to check your answers carefully**



# **COTTON**

- I        Introduction**
- II       Key Historical Dates**
- III      Parts of the Cotton Plant and their  
         Uses**
- IV      History of the Production of Cotton  
         Cloth**
- V       Cotton Production Today**
- VI      Problems and Pressures in Cotton  
         Production**
- VII     Cotton Production and the  
         Environment**
- VIII    Conclusion**

# **COTTON**

## **TEXT**

### **I. INTRODUCTION**

Good afternoon everyone. I would like to welcome you to the In-Sessional listening examination lecture, and my topic today is one with which every one of you is thoroughly familiar. I plan to speak on a subject which, though seemingly unimportant, has in fact influenced the world in a variety of important ways. These include economic aspects, as well as biological, geographical and historical aspects. Finally there are important environmental and ecological implications for this product. The product, or commodity, in question is one which I am sure all of you are close to; I mean this literally as all of you are probably wearing it as part of your clothing. I am talking about cotton. The subject of this lecture is cotton. Let us start with some key historical dates before moving on to the main sections of my talk which are: (outline II. Key Historical Dates, III parts of the cotton plant and their uses, IV history of the production of cotton cloth, V cotton production today, VI Problems and pressures in cotton production, VII Cotton production and the environment, VIII Conclusion),.

### **II KEY HISTORICAL DATES**

Cotton: just a little fluffy plant, but one which between 1750 and 1820 had a major impact on the industrial revolution. From 1810 to 1860 it extended the life of slavery in the United States. In 1861 it was a contributor to the outbreak of the American civil war. More recently, in the 1960s, it was the major cause of the drying up of the Aral Sea which was once the fourth largest expanse of inland water in the world.

I propose to talk on the subject of cotton and the various aspects I have already mentioned. Let us start with biological aspects before moving on to the history of cotton and the situation today.

### **III PARTS OF THE COTTON PLANT AND THEIR USES**

The word “cotton” refers to four species in the genus *Gossypium* that are cultivated as a source of textile fibre. Cotton is primarily grown as a fibre crop. It is harvested as “seed cotton” which is ginned - a process I will explain shortly – in order to separate the seed and the lint. These are the two main parts of the cotton plant. The lint is the fibre part of the plant which is separated from the seed; the lint has many uses which I shall explain shortly. The seed, meanwhile, can be used for planting, to produce further crops; it may also be crushed for oil which is used in a variety of products including foods. Next time you look closely at the ingredients on a processed food product you may notice that the fat used is cottonseed oil. The oil is mostly saturated: like butter it is fairly solid at room temperature. The oil from cotton is used not only in foods such as edible vegetable oils and margarine, but also in soap and plastics.

The other part of the cotton plant consists of long lint fibres which are further processed to produce the material which is woven into material for fabrics. After ginning, a process

which I will explain later, the seed is covered in short, fuzzy fibres, or hairs, which are removed before the seed is crushed. The first-cut fibre parts are long, and are used mainly in the production of mattresses and furniture upholstery. The second-cut fibre parts are much shorter and are a major source of cellulose for both chemical and food uses. For food, they turn up as a cellulose base in high-fibre dietary products as well as a thickener for ice cream, salad dressings and toothpaste. Further uses of lint include cord and rope, automobile-tyre cord, and plastic reinforcing.

We will return to the subject of cotton growing and its problems, but not until we have put the plant in context by examining its place in history.

#### **IV HISTORY OF THE PRODUCTION OF COTTON CLOTH**

Cotton has a long history. It was spun and woven into cloth even before 3000 BC. Two thousand years ago, babies born into poor families would have been wrapped in linen or silk, while only the babies of wealthy families would have been clothed in cotton. Right up until the time of the Industrial Revolution cotton was exceptionally expensive.

Cotton's popularity in early times was limited by the fact that making it wearable was seriously hard work. It still is today, but now we have machines. Let us now look at this process in brief. First, the white bolls, or fluffy balls, must be picked from the low plants on which they grow. Then they must be ginned – nothing to do with the alcoholic drink, a gin is the machine which separates the white hair, or fibres, from the rough seed. This picture [SHOW PICTURE # 1] shows a cotton gin with metal teeth which separate the hairs from the seed. For every kilogram of hair there are about three kilograms of seed.

Then the hairs must be cleaned and carded, in other words brushed so the fibres lie parallel, before being spun into thread.

This process, as you might imagine, was for centuries exceptionally labour-intensive. As late as 1770 it took about 14 man-days of labour to produce half a kilo of cotton. Wool, in comparison, took one or two days for the same weight. As a result, the cost of the finished product of cotton was hundreds of times more than the raw material, in other words the raw hairs from the cotton plant.

Two inventions transformed all this. In the 1760s James Hargreaves and Richard Arkwright developed a spinning machine that dramatically reduced the labour involved in turning cotton into thread. To illustrate this, in 1765 a mere 250,000 kilograms of cotton was spun in England, all by hand in people's homes. By 1784 the quantity had leapt to 8 million kilos. This was because in 1784 the cotton was spun by machines based on the inventions of Hargreaves and Arkwright. Such machines were grouped together in one place for efficiency and driven by water wheels. [SHOW MAP OF UK] Over half the mills in England were built on the banks of the rivers of Lancashire in the north west of the country. These mills depended on water to power them. Only with the introduction of steam-powered machinery in the 1790s was the industry freed from its dependence on water power. Steam power enabled spinning factories to move from rural river valleys to urban centres such as Manchester. By the 19<sup>th</sup> century cotton was Britain's largest export and Manchester was known as "Cottonopolis". We can see from this development that cotton was very much at the heart of the industrial revolution.

The second invention specifically for the cotton industry took place in America. In 1794 a man called Eli Whitney patented a mechanical gin that reduced the time taken in separating the hairs from the seed. Until this time the separation process had been hugely labour-intensive. Before the invention, one man would be lucky to produce half a kilo of cotton a day. With the aid of the mechanical gin he was able to produce up to 25 kilos a day.

The effects of these two inventions were far-reaching. One obvious result was, of course, a dramatic decrease in the price of cotton which, in turn, greatly increased demand for the product. Thus, two machines which were labour-saving devices, the spinning machine and the cotton gin caused such a drop in the price of the finished product of cotton that the demand rose phenomenally. As a result of this rapidly rising demand for cotton, the demand for labour increased. This labour was needed not for ginning – the new machines reduced the demand for that – but for growing the crop on a much larger scale. The supply of land, which was also necessary to plant the crop in such large amounts, was almost without limit in America. From the perspective of human suffering, it is a shameful fact of history that much of the labour to plant and look after the crop was supplied by a massive increase, indeed an eight-fold increase, in the number of African slaves. In addition, and equally shamefully, child labour was widespread in Britain. In one factory at the time 20% of the workforce was aged under nine years old. A further factor which led to ever-increasing demand for cotton was the growth in population. In

Britain, for example, the population was 5.7 million in 1750, but grew to 11.5 million in 1820.

Back in America, by 1820 the country was exporting 400,000 bales of cotton a year. By 1861 this had risen to 4 million bales. At the start of the American civil war cotton had overtaken sugar and tobacco as the number-one traded crop in the world. From then on it was known as “King Cotton”. But King Cotton had made the southern states in the US not only rich but lazy. It was their main crop. In the best selling novel *Gone With the Wind* the character Rhett Butler said, “Why, all we have is cotton and slaves and arrogance.” The northern Yankees, he continued, “would beat us decisively”, for they have “the factories, the steelworks, the shipyards, the iron and coal mines – all the things we haven’t got.” The character in the novel was right: the northern states were victorious, and their industrialisation spread southward to help build the strong America we recognise today.

The southern states, which relied almost totally on slave labour for harvesting the cotton, also depended on the people of Lancashire in north western England to turn their raw material into the finished product of cloth. The production of cotton became extraordinarily concentrated in these two places. By 1861 the United States was producing two-thirds of all the raw cotton exported around the world. Lancashire, in turn, produced two-thirds of all the cotton fabric which was traded. To give a modern parallel, it was as if two thirds of the cars in the world today were produced in China and two-thirds of their engines made in the American city of Detroit.

So, by the end of the 18<sup>th</sup> Century the production of cotton on a massive scale had begun. The scale of production has been increasing ever since. Let us move forward to more recent years and look at the situation of cotton production today, and in particular the current economic situation and environmental costs.

## **V COTTON PRODUCTION TODAY**

In short, only after the 1780s did cotton cease to be a luxury. Today, there can scarcely be a person on the planet that is not wearing at least one cotton garment at any one time: from the local outfits of people in India to Africa and denim wearers everywhere. It is the most popular clothing material by far: cotton provides about half of all global fibre requirements. Moreover, the ease with which cotton garments can be washed and reworn has improved human hygiene beyond measure.

While human hygiene and comfort may have increased, this has been at a considerable cost. These costs include exploitation of workers, unequal treatment of the developing world and widespread environmental damage. It is topical today: workers are still being exploited in the production of cotton textiles and clothing. The UN has reported that there is still child labour in some countries, and in many Asian countries adult workers are put under pressure to work longer shifts for low wages.

## **VI PROBLEMS AND PRESSURES IN COTTON PRODUCTION**



I will now turn to environmental damage by illustrating this first with the example of Uzbekistan, and then with the global damage caused by pesticides.

From a geographical point of view, the cotton plant, with plenty of water, grows almost anywhere. The Soviet Union realised this, as I shall illustrate shortly. The cotton plant can be grown up to 1500 metres above sea level, or on flat saltmarshes near the coast. Indeed, it is grown commercially in more than 50 countries of the world. Cotton production today is, however, concentrated by volume in just a few countries. The six big producers are the United States, China, India, Pakistan, Uzbekistan and Turkey. They account for about 75 per cent of global production. The main traders (which account for seventy per cent of world trade) are the United States, Australia, Pakistan, Paraguay and countries of the former Soviet Union. The United States is the biggest exporter, but is today only the second biggest producer. In 2001-2002 it grew 4.4 million tonnes, compared to the 5.3 million tonnes grown in China. Between them, these countries produce over 45% of all the cotton grown in the world.

Moving towards an economic perspective, an interesting picture emerges. Most of these countries offer huge subsidies to their cotton farmers. (Here, a subsidy means money that is paid by a government to help producers and farmers.) Subsidies are given out freely in some European Union countries such as Greece and Spain. These have the effect of working against the free market by bringing down prices. The countries which suffer from this are in Africa. In west Africa there are 10 million cotton farmers. They receive little in the way of subsidies and cannot compete fairly. Growers of other crops, such as

silk and linen, also cannot compete fairly. The same applies to manufacturers of synthetic, or artificial, fibres for clothing.

Quite recently, in the World Trade Organisation meeting in the Mexican resort of Cancun, cotton was the cause of a major argument. In fact, the argument in question caused the talks to break down completely. Four west African countries that grow cotton – Benin, Burkina Faso, Chad and Mali – managed to push the cotton situation onto the main agenda for the meeting. They rightly claimed that African farmers were being put out of business as a direct result of American subsidies of 3 billion dollars a year. This enormous amount of money goes to the 25,000 American citizens who grow cotton. However, the African delegates got little sympathy from the American negotiators who speak partly on behalf of their cotton farmers. So the Africans and some other sympathisers, refused to negotiate on any of the issues that the rich world wanted them to discuss. As a result, argued the World Bank, the best chance of lifting almost 150 million people out of poverty, was lost.

## **VII COTTON PRODUCTION AND THE ENVIRONMENT**

Political realities are unlikely to change soon. Many other countries aim to maximise their cotton crop. But what price do we pay for all this?

[MAPS]

In the middle of the twentieth century the continuing domination of America led its enemy the Soviet Union to attempt to produce its own cotton on a large scale. Stalin chose the Uzbek republic to grow enormous quantities of cotton, directly causing one of

the worst man-made disasters ever. Cotton is a thirsty plant. It requires a lot of water, and much of the Uzbek republic is desert. In order to irrigate the new crop, two major rivers were diverted using a huge system of canals and aqueducts. What the Soviet planners did not take into account was the fact that they were redirecting the only source of water for the Aral Sea. This sea was the life source for much of the surrounding people and animals. Today it is two separate lakes and a fraction of its former size. It has virtually no fish and the health of the inhabitants around it has declined significantly. Despite widespread awareness of the problem, very little has been done to reverse this environmental disaster. Today Uzbekistan is still the world's second biggest exporter of cotton, the thirsty plant.

According to the British magazine "New Internationalist", while only 2.4% of the arable land in the world is used for growing cotton, 24% of the pesticides sold by value on the world market in 1994 were used on cotton crops. (Pesticides are chemicals which are put on crops to kill off harmful insects and bacteria.) This figure may be even higher now. The organisation Gentech report that "Of the total amount of cotton pesticides used worldwide, it is estimated that 35 percent are applied to cotton fields in the United States... Close to \$3 billion worth of pesticides are used on cotton worldwide each year".

The results of such heavy pesticide use are widely discussed and undoubtedly serious. The pressure group Earthsake has reported that each year 14 million people routinely drink water contaminated with pesticides—much of it from cotton farming. Over 10,000 people die each year from cancer related to pesticides. A cocktail of heavy chemical

pesticides used globally for agricultural use to kill insects and mites are known to have long term toxicity; in other words they are highly poisonous. The organisation Sustainable Cotton argues that these pesticides have been implicated in brain and foetal damage, impotence and sterility as well as cancer, birth defects and immune system damage. Yet more pesticides are used in more countries than ever before - over \$26 billion annually.

So far I have given opinions which are against the intensive farming of cotton and use of pesticides. A different point of view is that held by parts of the industry itself. The voice of the genetically-modified plant industry tells a different story. Genetically modified cotton has been increasingly planted in recent years, especially in such countries as the United States and Australia. For example, the latest genetically modified cotton which dramatically reduces pesticide use, Bollgard® II, has been commercially available for planting in Australia for a few years.

According to an annual survey conducted by the U.S.Department of Agriculture (USDA), this year farmers in the United States will plant more genetically modified crops than ever before. Genetically modified crops accounted for 64% of cotton planted in the United States in 2001, and genetic engineering is already producing benefits for farmers, say those in favour. Genetic engineering, which can be applied selectively to give plants and crops improved qualities, helps farmers grow more food with much less pesticide and reduces the damage to the environment.

## **VIII CONCLUSION**

This brings me to the end of my lecture. I have discussed reasons for the controversy and importance of cotton. I hope you have learnt a little more about such a familiar product. As you leave the lecture theatre you can think about the origin and history of the cotton you are wearing, and talk about its environmental impact as well as its importance to certain economies. A study of cotton has shown us how such aspects might be applied to the study of a very wide range of products or ideas.

Thank you.