# SCIENCE

## TEXTBOOK FOR CLASS VII

SCIENCE

CLASS VII

पुजना International School
Shree Swaminarayan Gurukul, Zundal

# CLASS – VII

# SCIENCE

# TEACHER'S COPY

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## Class 7 Science
## Chapter – 3
# Fibre to Fabric

- **Key words:-**

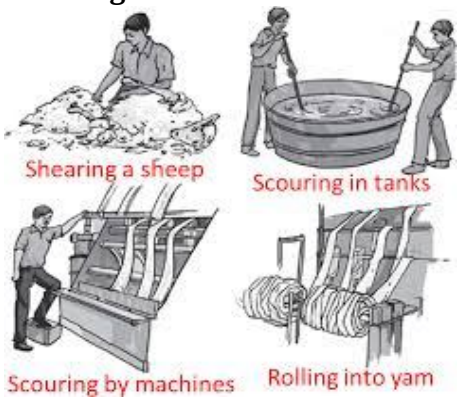
  **Fibres:** Long, fine, continuous threads or filaments are obtained from plants and animals. Two types of fibres:
  (i) **Animal fibres**
  (ii) **Plant fibres**

  **Silk** and **Wool** are common animal fibres

  **Silk** comes from silkworms and wool is obtained from sheep, goat and yak. Hence silk and wool are animal fibres.

  The hairs of camel, llama and alpaca are also processed to yield wool.

**Scouring:** Sheared hair is cleaned and washed in tanks to remove grease, dust and dirt.
**Sorting:** Cleaned hair is sent to a factory where hair of different textures are separated.




**EXTRA QUESTION ANSWERS:-**

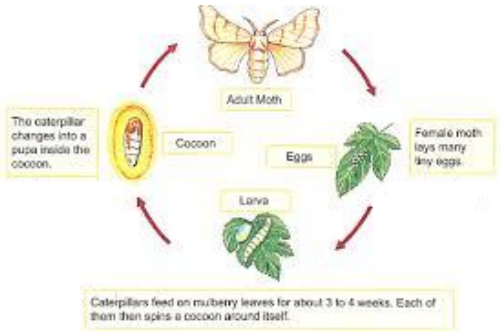
**VERY SHORT ANSWER QUESTION**

**1. The rearing of silkworms for obtaining silk is called**

**Ans.** The rearing of silkworms for obtaining silk is called sericulture.

**2. Silk fibre is obtained from**

**Ans.** Conversion of caterpillar to pupa involves a weaving of net around itself. It swings from side to side in the form of the figure of 8 and secretes a fibre made of a protein which gets hardened on exposure to air and becomes silk fibre that completely covers the caterpillar. This covering is known as cocoon. Silk fibre is obtained from this cocoon.




**3. How do the hair of certain animals help in keeping their bodies warm?**

**Ans.** The thick coat of hair traps a lot of air, which is a poor conductor of heat and hence don't allow the exchange of heat from animal's body to the environment, keeping it warm.

**SHORT ANSWER QUESTIONS**

**1. Write a caption for each of the figures given as Figure 3.2 (a–d).**

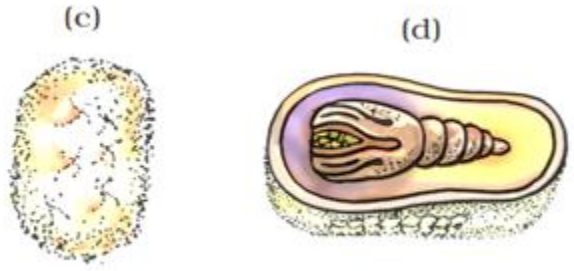



*Fig. 3.2*

**Ans.** (a) Eggs of silk moth on mulberry leaves

(b) Silkworm

(c) Cocoon

(d) Cocoon with developing moth

**LONG ANSWER QUESTIONS**

**1. Explain the phrase – "Unity is Strength" on the basis of the making of fabric from fibre.**

**Ans.** In a word, unity means oneness, or togetherness. When there is oneness there is likely to be more strength in opinion, more strength in action, and more strength in character. This is a very simple and obvious fact that, if one person tries his hands on some job, he will manage much less than what a group effort will achieve. This, in all simplicity what unity is all about.

Fabric is much stronger than fibre since it is a combination of these fibres. It is much hard to tear off a fabric than to tear a fibre. This transition gives an example in support of the fact that strength lies in unity.

**2Write various st. eps for processing fibres into wool.**

**Ans.**The wool which is used for knitting sweaters or for weaving shawls is the finished product of a long process,which involves the following steps:

Step I: The fleece of the sheep along with a thin layer of skin is removed from its body. This process is called shearing. Machines are used to shave off hair. Usually, hair are removed during the hot weather. This enables sheep to survive without their protective coat of hair. The hair provide woollen fibres. Woollen fibres are then processed to obtain woollen yarn.

Step II: The sheared skin with hair is thoroughly washed in tanks to remove grease, dust and dirt. This is called scouring.

Step III: After scouring, sorting is done. The hairy skin is sent to a factory where hair of different textures are separated or sorted.

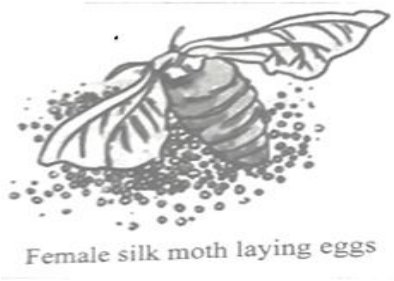
Step IV: The small fluffy fibres, called burrs, are picked out from the hair.
The fibres are scoured again and dried. This is the wool ready to be drawn into fibres.

Step V: The fibres can be dyed in various colours, as the natural fleece of sheep and goats is black, brown or white.

Step VI: The fibres are straightened, combed and rolled into yarn. The longer fibres are made into wool for sweaters and the shorter fibres are spun and woven into woollen cloth.

**3. Describe the life history of silk moth with the help of figures of various stages.**

**Ans.** The female silk moth lays eggs. Larvae hatches out from it and are known as silkworms. As they grow the silkworm gets ready to enter the next stage of life known as pupa. Conversion of caterpillar to pupa involves a weaving of net around itself. It swings from side to side in the form of the figure of eight (8) and secretes fibre made of a protein during these movement of the head which gets hardened on exposure to air and becomes silk fibre that completely covers the caterpillar. This covering in known as cocoon. Silk fibre is obtained from this cocoon. The further growth of the silk moth continues inside the cocoon.



Female silk moth laying eggs

Silkworm

Cocoon

Cocoon with developing moth

**EXERCISE :**

**Question1.** You must be familiar with the following nursery rhymes:

(i) ‘Baa baa black ship, have you any wool.’
(ii) ‘Mary had a little lamb, whose fleece was white as snow.’

**Answers the following:**
(a) Which parts of the black sheep have wool?
(b) What is meant by the white fleece of the lamb?

**Answer:** (a) The hairy skin i.e. fleece of the black sheep have wool.
(b) White fleece means the white coloured hair of the lamb.

**Question 2.** The silkworm is (a) a caterpillar, (b) a larva.Choose the correct option.

(i) a
(ii) b
(iii) both a and b
(iv) neither a nor b.

**Answer:** (iii) both a and b

**Question 3.** Which of the following does not yield wool?

(i) Yak
(ii) Camel
(iii) Goat
(iv) Woolly dog

**Answer:** (iv) Woolly dog.

**Question 4.** What is meant by the following terms?

(i) Rearing
(ii) Shearing
(iii) Sericulture

**Answer:** (i) Rearing : It means taking care of herds of animals which includes feeding, grazing, breeding, etc. for economical purpose like meat and other useful products.
(ii) Shearing : The removal of fleece of the sheep along with a thin layer of skin from its body is called shearing.
(iii) Sericulture : The rearing of silkworms to obtain silk economically is called sericulture.

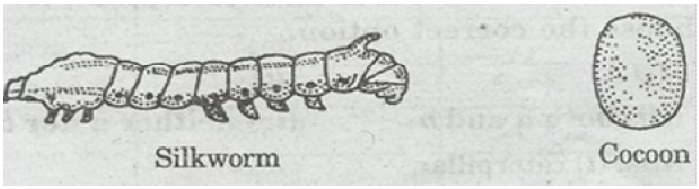
**Question 5.** Given below is a sequence of steps in the processing of wool. Which are the missing steps? Add them.

Shearing, ----------, sorting, ----------, ----------.

**Answer:** Shearing, **scouring**, sorting, **burrs picking, dying, rolling**

**Question 6.** Make the sketch of two stages in the life history of the silk moth which are directly related to the production of silk.

**Answer:**




**Question 7.** Out of the following, which are the two related to the production of silk. Sericulture, Floriculture, Moriculture, Apiculture and Silviculture.

**Answer:** Sericulture and Moriculture.

**Question 8.** Match the words of Column I with those given in Column II.

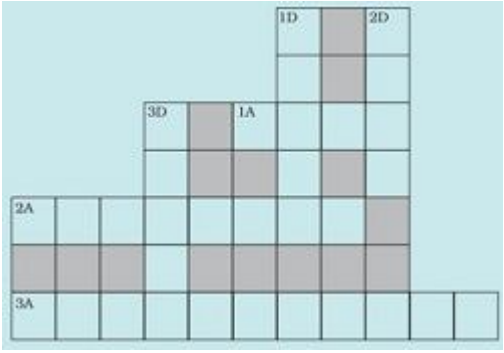
| Column I | Column II |
|---|---|
| 1. Scouring | (a) Yields silk fibres |
| 2. Mulberry leaves | (b) Wool yielding animal |
| 3. Yak | (c) Food of animal |
| 4. Cocoon | (d) Reeling |
| | (e) Cleaning sheared skin. |

**Answer:** 1. (e) 2. (c) 3. (b) 4. (a)

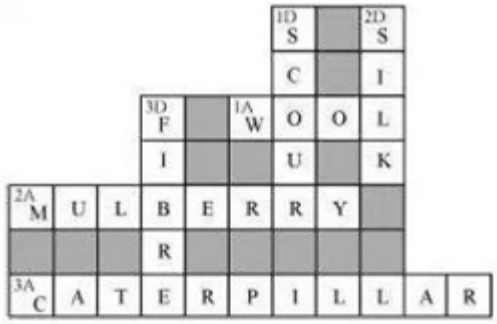
**Question 9.** Given below is a crossword puzzle based on this lesson. Use hints to fill in the blank space with letters that complete the words.

**Down**
D1. Thorough washing
D2. Animal fibre
D3. Long thread like

**Across**
A1. Keeps warm.
A2. Its leaves are eaten by silk worms.
A3. Hatches from egg of both structures



**Answer:**




## Class 7 Science
## Chapter – 4
# Heat

- **Key words:-**

**Heat:** It is a form of energy, which makes any object hot or cold

**Temperature:** The degree of hotness of an object is called temperature.

The normal temperature of the human body is 37°C.

**Clinical Thermometer:** It is a thermometer used to measure the temperature of our body. It consists of a long, narrow, uniform glass tube with a bulb containing mercury at one end. There is a kink near the bulb. It reads a range of temperatures from **94°**F to 108°F (35°C and **42°C**).

**Laboratory Thermometer:** It is a thermometer used to measure the temperature of objects other than our body. It consists of a column of mercury enclosed in a glass casing. The column is continuous without any kink. It measures a range of temperature from -10˚C to **110**˚C

**Convection:** It is the flow of heat through a fluid from places of higher temperature to places of lower temperature by movement of the fluid itself.

**Radiation:** It is the mode of transfer of heat in which energy is directly transferred from one place to another. It does not need any material medium.

Dark-coloured objects absorb radiation better than the light-coloured objects. That is the reason we feel more comfortable in light-coloured clothes in the summer.

**EXTRA QUESTION ANSWERS**:-

**VERY SHORT ANSWER QUESTIONS**

**1. A marble tile would feel cold as compared to a wooden tile on a winter morning, because the marble tile**

**Ans. (a)** is a better conductor of heat than the wooden tile.

**Explanation :** Marble tile being a good conductor of heat absorbs more heat from the foot as compared to wooden tile and hence makes feel colder than a wooden tile.

**2. Shopkeepers selling ice blocks usually cover them with jute sacks. Explain why.**

**Ans.** They must use some insulating material like, sack, saw dust, newspaper, etc. to cover the ice.It is done to prevent melting of ice.

**3. To keep her soup warm Paheli wrapped the container in which it was kept with a woollen cloth. Can she apply the same method to keep a glass of cold drink cool? Give reason for your answer.**

**Ans.** Yes, she can, because the air trapped in the layers of wool is a poor conductor of heat which prevents the heat from surroundings to get absorbed by the glass of cold drink . This keeps the glass of cold drink cool.

**4. In a mercury thermometer, the level of mercury rises when its bulb comes in contact with a hot object. What is the reason for this rise in the level of mercury?**

**Ans.** Mercury expands when heated. Hence, it rises in the capillary tube.

**SHORT ANSWER QUESTIONS**

**1. In the arrangements, A and B shown in Figure 4.7, pins P and Q are fixed to a metal loop and an iron rod with the help of wax. In which case are both the pins likely to fall at different times? Explain.**

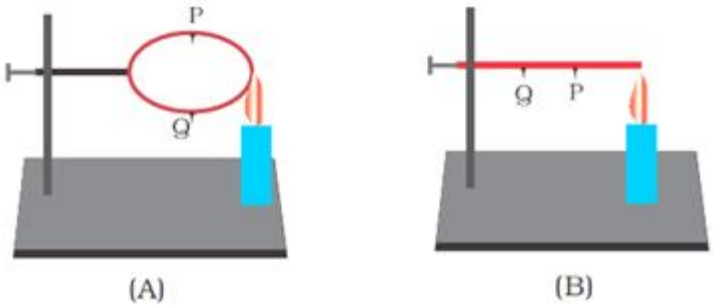



*Fig. 4.7*

**Ans.** In case 'B' the pin P will fall before the pin Q because the heat will reach pin P first. Whereas in case 'A', heat will flow in both the directions and both of the pins P and Q will fall simultaneously as both of them are equidistant from the point of heat supply.

**2. You may have noticed that a few sharp jerks are given to clinical thermometer before using it. Why is it done so?**

**Ans.** The jerk to the thermometer will allow the mercury in or above the kink to flow into the bulb so that the mercury level falls below 35°C.

**3. Why is it advised not to hold the thermometer by its bulb while reading it?**

**Ans.** If we hold a thermometer by its bulb, the mercury level will change to show the temperature of our hand and the desired reading will not be observed.

**4. While constructing a house in a coastal area, in which direction should the windows preferably face and why?**

**Ans.** The windows of houses in coastal areas should preferably face towards the sea as the blowing sea breeze will keep the house cool during the day time.

EXERCISE:-

**Question 1.** State similarities and differences between the laboratory thermometer and the clinical thermometer.

**Answer: Similarities:**
(i) both made up of uniform glass tube.
(ii) both contain mercury.
(iii) both have bulb at one end.
(iv) both generally have Celsius scale.

**Differences:**
(i) Range of laboratory thermometer is from 10°C to 110°C while range of clinical thermometer is from 35°C to 42°C.
(ii) Laboratory thermometer is used to take the reading of temperature in laboratory while clinical thermometer is used to measure the temperature f human body.
(iii) Mercury level falls when removed from the source in case of laboratory thermometer while in case of clinical thermometer

**Question 2.** Give two examples each of conductors and insulators of heat.

**Answer:**

| **Conductors** | **Insulators** |
|---|---|
| Iron | Wood (dry) |
| Copper | Plastic |

**Question 3.** Fill in the blanks:

(a) The hotness of an object is determined by its ----------.
(b) Temperature of boiling water cannot be measured by a ---------- thermometer.
(c) Temperature is measured in degree ----------.
(d) No medium is required for transfer of heat by the process of ---------.
(e) A cold steel spoon is dipped in a cup of hot milk. It transfers heat to its other end by the process of ----------.
(f) Clothes of ---------- colours absorb heat better than clothes of light colours.

**Answer:** (a) The hotness of an object is determined by its **temperature**.
(b) Temperature of boiling water cannot be measured by a **clinical** thermometer.
(c) Temperature is measured in degree **Celsius**.
(d) No medium is required for transfer of heat by the process of **radiation**.
(e) A cold steel spoon is dipped in a cup of hot milk. It transfers heat to its other end by the process of **conduction**.
(f) Clothes of **dark** colours absorb heat better than clothes of light colours.

**Question 4.** Match the following:

| | |
|---|---|
| (i) Land breeze blows during | (a) summer |
| (ii) Sea breeze blows during | (b) winter |
| (iii) Dark coloured clothes are Preferred during | (c) day |
| (iv) Light coloured clothes are Preferred during | (d) night |

**Answer:** (i) (d) (ii) (c) (iii) (b) (iv) (a)

**Question 5.** Discuss why wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing?

**Answer:** We wear more layers of clothing during winter to keeps us warmer than wearing just one thick piece of clothing because because air gets trapped in between the two layers of blankets. This air prevents the flow of heat from our body to the cold surroundings as air is bad conductor of heat.

**Question 6.** Look at Fig. 4.2. Mark where the heat is being transferred by conduction, by convection and by radiation.

**Answer:**


Fig 4.2

**Question 7.** In places of hot climate, it is advised that the outer walls of houses be painted white. Explain.

**Answer:** In places of hot climate it is advised that the outer walls of houses be painted white because white colour is absorb least heat. It reflects most of the heat and hence keeps the house cooler

**Question 8.** One litre of water at 30o30oC is mixed with one litres of water at 50o50oC . The temperature of the mixture will be

(a) 80o80oC
(b) More than 50o50oC
(c) 20o20oC
(d) Between 30o30oC and 50o50oC

**Answer:** (d) Between 30o30oC and 50o50oC

**Question 9.** An iron ball at 40o40oC is dropped in a mug containing water at 40o40oC the heat will

(a) Flow from iron ball to water.
(b) Not flow from iron ball to water or from water to iron ball.
(c) Flow from water to iron ball.
(d) Increase the temperature of both.

**Answer:** (b) Not flow from iron ball to water or from water to iron ball.

**Question 10.** A wooden spoon is dipped in a cup of ice cream. Its other end

(a) becomes cold by the process of conduction.
(b) becomes cold by the process of convection.
(c) becomes cold by the process of radiation.
(d) does not become cold.

**Answer:** (d) does not become cold.

**Question 11.** Stainless steel pans are usually provided with copper bottoms. The reason for this could be that

(a) Copper bottom makes the pan more durable.
(b) Such pans appear colourful.
(c) Copper is better conductor of heat than the stainless steel.
(d) copper is a better conductor of heat than the stainless steel.

**Answer:** (c) Copper is better conductor of heat than the stainless steel.