



## INDIAN SCHOOL AL WADI AL KABIR

<b>Class: VIII</b>	<b>Department: SCIENCE 2020 -2021</b>	<b>Date of Submission: 07.05.2020</b>
<b>Worksheet No.: 2 With answers</b>	<b>Topic: Synthetic fibres and plastics</b>	<b>NOTE: A4 FILE FORMAT</b>
<b>NAME OF THE STUDENT:</b>	<b>CLASS &amp; SEC:</b>	<b>ROLL NO.</b>

### I. OBJECTIVE TYPE QUESTIONS:

- The material similar to silk in appearance is  
(i)Nylon (ii) **Rayon**  
(iii) Polyester (iv) Terylene
- The most suitable material used for the preparation of handles of cooking utensils is  
(i)Polythene (ii) PVC  
(iii) Nylon (iv) **Bakelite**
- Which of the following represents the correct match for items in Column A with those in Column B.  
Column A – Column B  
I. Nylon – (i) Thermoplastic  
II. PVC – (ii) Thermosetting plastic  
III. Bakelite – (iii) Fibre  
Choose the option  
(a) I-(ii), II-(iii), III-(i) (b) **I-(iii), II-(i), III-(ii)**  
(c) I-(ii), II-(i), III-(iii) (d) I-(iii), II-(ii), III-(i)
- Which of the following groups contain all synthetic substances?  
(i)Nylon, Terylene, Wool (ii)Cotton, Polycot, Rayon  
(iii) **PVC, Polythene, Bakelite** (iv)Acrylic, Silk, Wool
- Firefighters' uniform is coated with a plastic that is fire resistant. Identify the plastic from the given options.  
(i)Teflon (ii) **Melamine**  
(iii)PET (iv)Polyester
- Modern non-stick cookware and the flat end of an electric iron has a coating of a polymer. Identify the name of the polymer.  
(i)PVC (ii)Rayon  
(iii) **Teflon** (iv)Polyester

7. Petrochemicals are
- (i) mixtures of petrol and chemical fertilizer.
  - (ii) **materials obtained from petroleum refining.**
  - (iii) mixtures of coal and petrol.
  - (iv) mixtures of wood and chemicals.

For question numbers 8 to 10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R).

**Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below**

- i) Both A and R are true and R is correct explanation of the assertion.**
- ii) Both A and R are true but R is not the correct explanation of the assertion.**
- iii) A is true but R is false.**
- iv) A is false but R is true**

8. **Assertion-** Acrylic fibres are used in making socks and shawls.

**Reason-** Acrylic fibres are a replacement of woolen fibres.

**Ans: i) Both assertion and reason are true and the reason is the correct explanation of assertion.**

9. **Assertion-** Bakelite is Used for making electrical switches, handles of various utensils.

**Reason-** Bakelite is a thermosetting plastic. Thermosetting plastics are those plastics which once moulded, cannot be softened by heating.

**Ans: i) Both A and R are true and R is correct explanation of the assertion.**

10. **Assertion-** Rayon is called artificial silk.

**Reason-** Raw materials used to prepare rayon are coal, air and water.

**Ans: ii) A is true but R is false.**

## **II. BASIC CONCEPTS LEVEL:**

1. Terrycot is made by mixing two types of fibres. Write the names of the fibres **[Hint- Terrycot is prepared by mixing terylene and cotton..]**
2. A bucket made of plastic does not rust like a bucket made of iron. Why?? **[Hint- Plastic is a non-reactive material. To form rust it should react with water and oxygen. Hence plastic does not form rust.]**
3. Differentiate:
  - a) Thermosetting plastics and thermoplastics with examples

S.NO.	Thermosetting plastic	Thermoplastic
(i)	Thermosetting plastic cannot be bent easily. It may break when forced to bend.	Thermoplastic can be bent easily
(ii)	Thermosetting plastic cannot be softened by heating. Thus, it cannot be reshaped once moulded. Eg: Bakelite	Thermoplastic can be softened easily by heating. Thus, it can be reshaped. Eg: polythene

b) Natural fibres and Synthetic fibres with examples.

S.NO.	Natural fibres	Synthetic fibres
(i)	These fibres are naturally obtained from plants and animals	These fibres are made by man in factories.
(ii)	For example, cotton, silk, etc.	For example, rayon, polyester, etc.

c) Biodegradable substances and non-biodegradable substances

S.NO.	Biodegradable resources	Non-biodegradable resources
1.	The substances which get degraded to their simpler and harmless substances over a period of time by the action of bacteria are known as biodegradable.	The sources which do not get degraded to their simpler and harmless substances over a period of time are known as non-biodegradable.
2.	They are not harmful to animals and plants. Eg: cow dung, leaves, paper, etc.	They are harmful to plants and animals. Eg: DDT, plastic, polyethene, etc.

4. Why is it not advisable to burn plastic and synthetic fabrics?

Hint: Burning of plastic releases toxic gases which pollutes the air. Hence it not advisable to burn plastic and synthetic fabrics.

5. Plastic is used for making a large variety of articles of daily use and these articles are very attractive. But it is advised to avoid the use of plastic as far as possible. Why?

Hint: Plastic is not bio-degradable and disposing of plastic waste is a major issue. Hence it is advised to avoid the use of plastic as far as possible.

6. What are plastics?

Hint: Plastics are those substances which are mostly synthetic in nature, obtained mainly from petrochemical sources and can be moulded into different shapes.

### **III. INTERMEDIATE LEVEL:**

1. List any three properties of plastics.

Hint: The three properties of plastics are: They are non-corrosive in nature, they are light in weight and durable, They do not conduct heat

2. Why is it advised not to burn plastic and synthetic fibers? (Hint: cause air pollution, various respiratory diseases, and acid rains.)

3. Give reasons for the following:

a. Nylon is very popular for making clothes.

Hint: Nylon fibres are strong, elastic and light. It is lustrous and easy to wash. So, it became very popular for making clothes.

b. Frying pan handles are made up of thermosetting plastics.

Hint: Frying pan handles are made with thermosetting plastics which are resistant to fire and can tolerate heat better than other plastics. For example, Bakelite is a thermosetting plastic which is a poor conductor of heat and electricity.

c. Plastic containers can be used to store many chemicals.  
**Hint: Plastic bottles commonly used to store chemicals in a chemistry laboratory because plastics are non-reactive that is they don't react with other substances/ chemicals.**

d. Melamine is a versatile material.  
**Hint: Melamine is a versatile material.it resist fire and can tolerate heat better than other plastics.it is used for making floor tiles, kitchenware and fabrics which resist fire.**

e. PET bottles are preferred in kitchens today over glass bottles.  
**Hint: Plastic is much lighter and more durable than glass. This makes it cheaper to transport, plastic is more flexible than glass, making it easier to be molded.**

4. A lady went to the market to buy a blanket. The shopkeeper showed her blankets made of acrylic as well as wool. She preferred to buy acrylic blanket. Why? **(Hint: It is cheap, available in variety of colours, durable.)**

5. Nylon ropes are preferred over other ropes meant for climbing. Why? **(Hint: Have high elasticity and good tensile strength)**

6. Observe the figure carefully and answer the questions that follow:

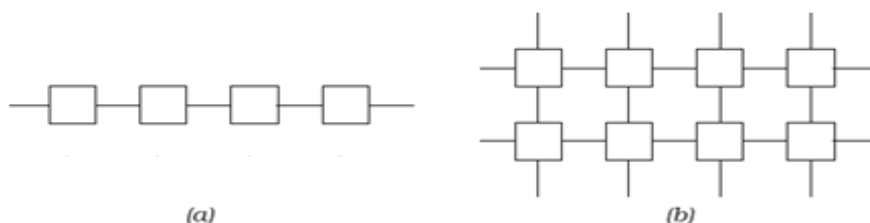
a) Identify the articles given in the figures A and B. **(A- rope, B- parachute)**

b) Name the substance used in making these articles and why? **(nylon- high tensile strength)**



7. Why are we advised not to wear synthetic clothes while working in the kitchen? **(Hint: Catch fire easily, will melt and stick to the body.)**

8. What do the following figures represent? Explain their differences. **(Hint: Linear and cross-linked polymerisation)**



9. Why are handles of sauce pans made of plastic? **(Hint: Bad conductors of heat)**

10. How can we contribute to reduce hazards of plastics? **(Hint: 4Rs...)**

11. Give two uses each of rayon, polyester, acrylic.

**Hint:** Rayon is used in textile industry for making textiles. Rayon is used for making tyre cords. It is used for making carpets and surgical dressings.

Polyester fibres are widely used in textile industry for making a variety of textiles such as sarees, dress materials, curtains, etc. They are also blended with natural fibres such as cotton and wool. It is also used for making sails of sailboats.

Acrylic is used to make sweaters and shawls. It is also used to make car tops and boat covers. It is used to make filtration materials and car batteries.

12. Mention the characteristics of synthetic fibres and a major disadvantage of synthetic fibre.

**Hint:** synthetic fibres are cheaper than natural fibre.

- **Synthetic fibres** are stronger than natural fibre.
- **Synthetic fibres** are more durable than natural fibre.
- **Synthetic** fabrics are dried up in less time. They are easy to maintain and wash.

**Disadvantages**

- They easily melt and burn to form small sticky beads at a very high temperature. ...
- Unlike natural fibers, they do not absorb sweat. ...
- They get electrically charged in dry weather. ...

13. Plastics have extensive use in health care industry. How? (Hint: packing tablets, thread used to stitch wounds, doctor's gloves)

**IV.ADVANCED LEVEL:**

1. Which type of fabrics are used by fire men. Why? (Hint: Fire proof plastics, with coating of melamine to make it flame resistant)

2. Two beakers with equal amounts of water are taken. Equal pieces of cotton and polyester fabrics are soaked into two beakers. Both the fabrics are then dried in the sunlight.

a) Which of the two beakers will have lesser amount of water left in it when the fabric kept in it is taken out?(hint: The beaker with cotton fabric)

b) Which fabric will take lesser time to dry? Give reasons for your answer.(Polyester because it absorbs less water)

3. Manufacturing synthetic fibers are actually helping conservation of forests. Comment. (Hint: reduced cutting of trees, reduced usage of various forest products.)

**IV.EXEMPLAR QUESTIONS:**

1. Which plastic is used to make:

- a) Non-stick coating on Cookware: **Teflon**
- b) Insulation covering on Wires: **PVC**
- c) Polythene Bags: **Polythene**
- d) Flame-resistant Uniforms: **Melamine**

2. What are blended fibres? Give some examples.

**Hint:** Blended fibres are formed by mixing natural and synthetic fibres. Polyester is often used in blended fibres.

**For Example,**

- Polywool is made by mixing polyester and wool.
- Polycot is made by mixing polyester and cotton.
- Terrycot is made by mixing Terylene and cotton.

3. Why polyester is quite suitable for making dress materials? Name any two types of polyesters and their uses.

**Hint:** Fabric made from polyester does not get wrinkled easily. It remains crisp and is easy to wash. So, it is quite suitable for making dress material. Terylene is a type of popular polyester. It can be drawn into very fine fibers that can be woven like any other yarn.

PET is a very familiar form of polyester. It is used for making bottles, utensils, films, wires and many other useful products.

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