INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VIII	**DEPARTMENT: SCIENCE 2023 - 24**	**DATE: 30.04.2023**
WORKSHEET NO.: 2 WITH ANSWERS	**TOPIC: SYNTHETIC FIBRES AND PLASTICS**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT:	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE-TYPE QUESTIONS

1) Rajesh found that woollen blankets were expensive as they were made from natural fibre. He wanted a blanket which was similar to a woollen blanket, but cheaper. He can buy a blanket made of _____ fibre

   a. (a) Silk **(b) acrylic** (c) Nylon (d) cotton

2) Ram wears a shirt that does not get wrinkled easily. It remains crisp and is easy to wash while Shyam wears a shirt that gets wrinkled very soon. Which fibre is probably used in Ram's shirt?

   a. **(a) polyester** (b) cotton (c) wool (d) jute

3) Government has banned the use of plastic carry bags. Shopkeepers are advised to promote the use of reusable paper and cloth bags. What is a likely reason for the ban of plastic carry bags?

   (a) They burn slowly and release poisonous fumes into the environment.

   (b) They get completely burnt and removed from the environment.

   (c) They degrade naturally in the soil to release harmful substances.

   (d) They require a large number of bacteria for their degradation.

4) The image shows some products that are made up of different type of plastics.

Which products are correctly matched with the type of plastics?

(a) Q and R- Thermosetting plastic

(b) P and Q- Thermosetting plastic

(c) R and S- Thermoplastic

(d) S and Q- Thermoplastic

5) The similarity between artificial silk and cotton is that:

(a) both are non-biodegradable (b) both are amide polymers

(c) both melt on heating **(d) both are cellulose polymer**

6) In chemical laboratories, many salts like ammonium nitrate are stored in plastic containers instead of metals. What can be a likely reason for the same?

(a) Plastic does not react with chemical substances.

(b) Plastic is less expensive than metal.

(c) Plastic is easier to handle than metal.

(d) Plastic gets rusted in the presence of air.

For questions 7,8,9 and 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 the correct explanation of assertion.

ii)Both A and R are true but R is not the correct explanation of assertion.

iii) A is true but R is false.

iv) A is false but R is true

7) **Assertion:** Acrylic fibres are used in making socks and shawls.
Reason: Acrylic fibres resemble woollen fibres. It is less expensive and can be dyed in different colours.

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

8) **Assertion:** Bakelite is used for making electrical switches and handles of various utensils.
Reason: Bakelite is a thermosetting plastic which is a poor conductor of both heat and electricity.

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

9) **Assertion:** Rayon is called artificial silk.
Reason: Raw materials used to prepare rayon are coal, air and water.

ii) A is true but R is false.

10) **Assertion:** During recycling of plastic certain colouring agents are added.
Reason: Adding colouring agents during recycling of plastic increases its usage especially for storage of food

ii) A is true but R is false.

II.SHORT ANSWER TYPE QUESTIONS (2M):

1. a) 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 like iron. Hence plastic does not form rust.]
   b) Why are plastic articles available in all shapes and sizes?
   [Hint: Plastic can be easily mouldable i.e. it can be shaped in any form.]
2. Differentiate:

a) Natural fibres and Synthetic fibres with examples.

S.NO.	Natural fibres	Synthetic fibres
(i)	Fibres that are naturally obtained from plants and animals.	The fibres which are made by man from petrochemicals.
(ii)	For example, cotton, silk, etc.	For example, rayon, polyester, etc.

b) Biodegradable materials and non-biodegradable materials

S.NO.	Biodegradable	Non-biodegradable resources
(i)	The materials which gets decomposed through natural processes ,such as action by bacteria are called biodegradable.	The materials which are not easily decomposed by natural processes are called non-biodegradable.
(ii)	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.

3.What are plastics? Why is it not advisable to burn plastic and synthetic fabrics?
[Hint: Plastics are those substances which are mostly synthetic, obtained mainly from petrochemical sources that can be moulded into different shapes.
The burning of plastic is quite slow and it does not get completely burnt easily .It also releases toxic gases which pollutes the air. Hence it is not advisable to burn plastic and synthetic fabrics.]

4.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.]

III. b) SHORT ANSWER TYPE QUESTIONS (3 M):

1. a) List any three properties of plastics.
   [Hint: The three properties of plastics are:

They are non-corrosive, they are light in weight and durable, and they do not conduct heat].

b) Why should we use a cotton carry bag or jute bag while going to market?

[Hint: We should use cotton or jute bags while going to the market to minimise the use of plastic bags, as they are non-biodegradable and not environment friendly.]

2. Give reasons for the following:
   a) Nylon is very popular for making clothes.
   [Hint: Nylon fibres are strong, elastic and light weight. 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 are commonly used to store chemicals because plastics are non-reactive i.e they don't react with other substances/ chemicals.]**
   d) Melamine is a versatile material.
   [Hint: Melamine is a versatile material. It resists 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. It is cheaper and easy to transport. Additionally, plastic is more flexible than glass.]

3. Observe the figure and answer the questions that follow:
   a) Identify the articles given in figures A and B.
   b) Name the substance used in making these articles and why?

[Hint -a)i- Rope, ii- parachute, b)Nylon, it is strong, has high tensile strength]

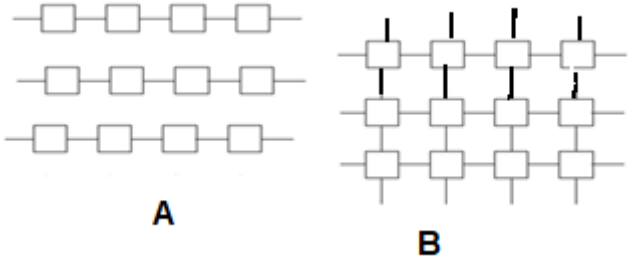
   c) Why are we advised not to wear synthetic clothes while working in the kitchen?
   [Hint: Catch fire easily, will melt on heating and stick to the body of the person wearing it .]

   d) Explain about the first ''fully synthetic fibre''.

[Hint: The first fully synthetic fibre was nylon. It was prepared from coal, water and air. It is very strong, elastic and light weight, it is very easy to wash and used for making a variety of things like socks, ropes, bags, curtains, parachutes etc.]

4. a) What do the following figures represent? Mention their main difference in the arrangement of units .

[Hint: Linear and cross-linked arrangement of units in plastic]



[Hint:The main difference between linear polymers and cross-linked polymers is that linear polymers are straight-chain structures i.e. the monomer units are connected in linear manner whereas cross-linked polymers are branched structures i.e. cross-links exists between two linear chains, forming a three-dimensional manner.]

b) Define (i) petrochemicals (ii) Polymer (iii) Esters

[Hint: (i) Many useful substances that are obtained from petroleum and natural gas are termed as 'Petrochemicals'.
(ii) Polymers are very large unit formed by the combination of a large number of smaller molecules(monomers) joined end to end by chemical bond.
(iii) Esters are the chemicals which give fruits their smell.]

5. Give two uses each of rayon, polyester, and acrylic.

[Hint: Rayon is used in the textile industry for making clothes. Rayon is used for making tyre cords. It is used for making carpets and surgical dressings. Polyester fibres are widely used in the textile industry for making a variety of clothes such as sarees, curtains, etc. They are also blended with natural fibres such as cotton and wool. It is also used for making sails of sailboats and conveyer belts.
Acrylic is used to make sweaters and shawls. It is also used to make car tops and boat covers. It is used to make carpets and lining for boots and gloves.]

IV.LONG ANSWER TYPE QUESTIONS (5 M):

1. a) Mention the characteristics of synthetic fibres and 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.**
- **Synthetic fibres are easy to maintain and wash.**

Disadvantages

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

b) Name two polyester fabrics and their uses. **[Hint: Terylene and PET are two widely used polyester fabrics. Terylene can be drawn into very fine fibres that can be woven like any other yarn .It is used to make various dress materials . PET is one of the familiar forms of polyester that is used to make bottles, utensils, wires and many other things]**

2. a) List the strategies for plastic waste management.

[Hint: Some of the strategies for plastic waste management are:

- **We should use paper bags and jute bags instead of using plastic bags.**
- **The government should ban the use of plastic bags.**
- **Plastics should be recycled to make other useful products which do not harm the environment.**
- **We should use special garbage bins to dispose of plastic wastes.**
- **We should not throw plastic wastes into water bodies.**
- **Practicing 5R's principle, i.e., Reuse, Recycle, Reduce , Recover and Refuse should be encouraged.**

b)What are blended fabrics? Give some examples.

[Hint: Fabrics made by mixing two or more types of fibres to improve the quality of fabrics .

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.]**

V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS (5 M):

John conducted two activities after learning about synthetic fibres and plastics. In his first activity he took two beakers with equal amounts of water . Equal pieces of cotton and polyester fabrics are soaked into two beakers. Both the fabrics are then dried in the sunlight. In his second activity he puts some hot water in an empty plastic bottle and also in a plastic bowl used in the kitchen. He observes that the plastic bottle gets deformed while the plastic bowl remains the same. He asked the reason to his science teacher. The teacher explained that synthetic fabrics absorb less water and dried up in less time also plastic which gets deformed easily on heating and can be bent easily is known as thermoplastics .Those plastics when moulded once, cannot be softened by heating are called thermosetting plastics.

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

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

iii) Manufacturing synthetic fibres is helping the conservation of forests. Comment**. (Hint: reduced cutting of trees, reduced usage of various forest products.)**

iv) Based on John's observation, what can be said about the bottle or the bowl? **[Hint: Plastic bowl is a thermosetting plastic while a plastic bottle is a thermoplastic.]**

Prepared by: Ms. Suma Senu	Checked by: HOD – SCIENCE & FRENCH