

## Lakhmir Singh Science Class 8 Solutions For Chapter 3 Synthetic Fibres And Plastics

**1. Name the units of which cellulose polymer is made.**

Answer

Cellulose is made up of repeating units of monomer glucose.

**2. Name the man-made fibre prepared from natural materials.**

Answer

The man-made fibre prepared from natural materials is rayon.

**3. Name the man-made fibre which is regarded as artificial silk.**

Answer

The man-made fibre which is regarded as artificial silk is rayon.

**4. Name the fibre obtained by the chemical treatment of wood pulp (or cellulose).**

Answer

The fibre obtained by the chemical treatment of wood pulp (or cellulose) is rayon.

**5. Name the first fully synthetic fibre.**

Answer

Nylon is the first fully synthetic fibre.

**6. Name the fibre used for making parachutes and rock climbing ropes.**

Answer

The fibre used for making parachutes and rock climbing ropes is nylon.

**7. Which synthetic fibre contains the organic group similar-to those which give fruits their sweet smell.**

Answer

Polyester is the synthetic fibre contains the organic group similar-to those which give fruits their sweet smell.

**8. Which synthetic fibre feels like wool and used as a substitute for wool?**

Answer

Acrylic is the synthetic fibre feels like wool and used as a substitute for wool.

**9. To which kind of synthetic fibres does terylene belong?**

Answer

Terylene belongs to polyester kind of synthetic fibres.

**10. State one disadvantage of using synthetic fibres for making clothes.**

Answer

The synthetic fibres melt at high temperatures or on heating. Hence it is advised not to wear synthetic clothes while cooking or during summer.

**11. Name the form of polyester which is replacing materials like glass and used for making bottles and jars.**

Answer

The form of polyester which is replacing materials like glass and used for making bottles and jars is Polyethylene terephthalate (PET).

**12. Name four different plastics.**

Answer

Polyethene, PVC, Bakelite and melamine are the four different types of plastics.

**13. Give one use of Teflon.**

Answer

It is used in nonstick cooking vessels.

**14. Which of the two is a thermosetting plastic: PVC or bakelite?**

Answer

Bakelite is thermosetting plastic.

**15. Fill in the following blanks with suitable words:**

(a) Synthetic fibres are also called \_\_\_\_\_ or \_\_\_\_\_ fibres.

(b) Synthetic fibres are made from raw materials called \_\_\_\_\_

(c) Like synthetic fibres, plastic is also a \_\_\_\_\_

(d) The use of plastics can be reduced by using bags made of \_\_\_\_\_ or \_\_\_\_\_ instead of polythene bags.

Answer

(a) Synthetic fibres are also called man-made or artificial fibres.

(b) Synthetic fibres are made from raw materials called petrochemicals.

(c) Like synthetic fibres, plastic is also a polymer.

(d) The use of plastics can be reduced by using bags made of paper or jute bags instead of polythene bags.

## Short Answer Type Questions

**16. What is a polymer? Name the natural polymer from which cotton is made.**

Answer

Synthetic fibres are fibres that are made by man. It is a chain of units put together to form a Polymer. A polymer comprises of these small units put together to form a larger unit. However, some

polymers occur freely in nature. Cotton, for instance, is a natural polymer consists of a polymer called cellulose, which is in turn made up of a group of glucose units.

**17. State the characteristics of synthetic fibres.**

Answer

- These fibres are filaments that are crystalline in nature
- Robust and high elasticity
- Much cheaper compared to natural fibre
- Stronger than naturally occurring fibre
- Very durable
- Dry up quickly hence used in making dress materials
- Available readily as compared to natural fibres
- Can be maintained easily
- Easy to wash

**18. What is nylon? State the important properties of nylon.**

Answer

The first fully synthetic fibre, nylon, is a man-made fibre. Back in 1931, it was made purely from coal, water, and air. It did not use raw materials from animals and plants. Properties of nylon are:

- Nylon is light, strong – stronger than a strand of steel of comparative thickness
- Nylon has elastic and lustrous properties
- Nylon is easy to wash

**19. Give the important uses of nylon.**

Answer

Nylon is used in ropes, tents, bags, curtains, parachute ropes, socks and ropes for rock climbing.

**20. What is polyester? Name a popular polyester.**

Answer

Polyesters are formed as a result of condensation of dicarboxylic acids and diols. The most popular example of polyester is terylene. When ethylene glycol and terephthalic acid is heated at 420 to 460 K in the presence of zinc acetate-antimony trioxide catalyst, the polyester terylene is manufactured. Polycot is popular polyester used in textile manufacturing units.

**21. Arrange the following fibres in the order of increasing strength (keeping the fibre of least strength first): Nylon, Cotton, Wool, Polyester, Silk**

Answer

Fibres in the order of increasing strength are nylon, cotton, polyester, nylon and silk.

**22. What is PET? State the uses of PET.**

Answer

“Polyethylene terephthalate is a condensation polymer of ethylene glycol and terephthalic acid.” The by-product of the reaction to create this compound is water so it is an example of condensation or step-growth polymerization.

PET is used in manufacturing of the following products:

- shopping bags, water bottles, videotapes
- containers and bags
- clothes and housing material

**23. What is acrylic? State one important property of acrylic.**

Answer

Acrylic is flexible, light and soft, this synthetic fibre is formed using acrylic acids. These are widely used in paints, acrylic paints. Clothes made using acrylic synthetic fibre is comparatively cheaper compared to those made from natural sources like wool.

**24. Write the uses of acrylic fibres.**

Answer

Uses of acrylic fibres:

- used for making sweaters
- used for making blankets
- used for making shawls
- used for making socks
- used for making carpets

**25. Why should we not wear clothes made of synthetic fibres (like nylon or polyester) while working in the kitchen?**

Answer

The synthetic fibres melt at high temperatures or on heating. Hence it is advised not to wear synthetic clothes while cooking or during summer.

**26. What type of shirts should we buy for summer: cotton shirts or shirts made from synthetic materials (like polyester)? Give a reason for your answer.**

Answer

We should buy cotton shirts for because in summer it absorbs this sweat from our body and keeps our body cool while synthetic clothes doesn't absorb the heat and make us feel hotter. The synthetic fibres melt at high temperatures during summer.

**27. Explain how, manufacturing of synthetic fibres is actually helping in the conservation of forests.**

Answer

The raw materials for natural fibres are mainly derived from plants and animals. It requires the cutting of a lot of trees which leads to deforestation. On the other hand, the raw materials for synthetic fibres are mainly petrochemicals such as coal. Hence, the manufacturing of synthetic fibres helps in the conservation of forests.

**28. What are plastics? Name any five commonly used articles made of plastics.**

Answer

Plastic is also a polymer like the synthetic fibre. Plastic is a polymer which has different types of arrangement of the monomer unit. They can have a linear structure, branched or a cross-linked structure.

Articles made from plastic are: Toys, bottles, storage containers, bags, buckets.

**29. What are the various types of plastics? Give two examples of each type of plastics.**

Answer

Depending on physical properties, plastics are divided into two types: Thermoplastic and thermosetting.

1. **Thermoplastic:** Plastics that can be deformed easily upon heating and can be bent easily. Linear polymers and a combination of linear and cross-linked polymers come under thermoplastics. Example: PVC, nylon, polythene, etc.
2. **Thermosetting:** Plastics that cannot be softened again by heating once they are moulded. Heavily cross-linked polymers come under the category of thermosetting plastics. Example: Bakelite, melamine, etc. Bakelite is used for making electrical switches whereas melamine is used for floor tiles.

**30. Why are thermoplastics not used for making frying panhandles?**

Answer

Thermoplastics that can be deformed easily upon heating and can be bent easily hence they are not used for making frying panhandles.

**31. Explain why frying pan handles are made of thermosetting plastics.**

Answer

Thermosetting plastics that cannot be softened again by heating once they are moulded and they do not get affected at high temperatures. Hence, frying pan handles are made of thermosetting plastics.

**32. Why are electric switches, plugs and sockets made of thermosetting plastics?**

Answer

Thermosetting plastics that cannot be softened again by heating once they are moulded. Heavily cross-linked polymers come under the category of thermosetting plastics. Example: Bakelite, melamine, etc. Bakelite is used for making electrical switches whereas melamine is used for floor tiles.

**33. Explain the difference between thermoplastics and thermosetting plastics.**

Answer

**Thermoplastic:** Plastics that can be deformed easily upon heating and can be bent easily. Linear polymers and a combination of linear and cross-linked polymers come under thermoplastics. Example: PVC, nylon, polythene, etc.

**Thermosetting:** Plastics that cannot be softened again by heating once they are moulded. Heavily cross-linked polymers come under the category of thermosetting plastics. Example: Bakelite, melamine, etc. Bakelite is used for making electrical switches whereas melamine is used for floor tiles.

**34. Should the handle and bristles of a toothbrush be made of the same type of plastic material?**

**Explain your answer.**

Answer

The handles and bristles of a toothbrush should not be made of the same type of plastic material. The handle should be made up of strong and hard plastic whereas bristles should be made up of soft and flexible plastic.

**35. Explain why plastic containers are preferred for storing food.**

Answer

Plastic containers seem more convenient than metal containers. This is because of their light weight, lower price, good strength and easy handling. Being lighter as compared to metals, plastics are used in cars, aircrafts and spacecrafts also.

**36. Choose the thermoplastics and thermosetting plastics from the following: Melamine, Polythene, Bakelite, Polyvinyl Chloride**

Answer

Thermoplastics: Melamine and bakelite

Thermosetting plastics: Polythene and Polyvinyl Chloride

**37. State two uses of polythene.**

Answer

- It is a useful plastic for molding and extruding in various shapes such as bottle, sheets and pipes etc.
- It is used for plastic bags, stretch films because of its clear and crystalline nature.

**38. Write the full form of PVC. Is it thermoplastic or thermosetting plastic?**

Answer

PVC stands for Poly Vinyl Chloride. It resides under the category of thermoplastics.

**39. Write two uses of Bakelite.**

Answer

- It can be used in manufacturing electrical switches and machine parts of electrical systems.
- used for making the handles of a variety of utensils.

**40. State two uses of melamine.**

Answer

- It can be used to make kitchen wares
- It is used in fabrics that need fire resistance

**41. Give two uses of PVC.**

Answer

- Polyvinyl chloride is used in clothing and furniture
- construction of doors and windows as well

**42. Write some of the uses of plastics in the healthcare industry.**

Answer

- Used in packaging tablets
- Used in making syringes and medical instruments

**43. Classify the following as biodegradable and non-biodegradable materials: Woollen clothes, Polythene bags, Paper, Aluminium cans, Toothbrush, Peels of vegetables and fruits, Cotton cloth, Jute bag, Electric switch, Frying panhandle.**

Answer

Biodegradable materials: Woolen clothes, paper, peels of vegetables and fruits, cotton cloth, jute bag

Non-biodegradable materials: Polythene bags, Aluminium cans, Toothbrush, Electric switch, Frying panhandle.

**44. State whether plastic is biodegradable or non-biodegradable? Give reasons for your answer.**

Answer

Plastic is non-biodegradable. It takes several years for plastic to decompose and it is not environment friendly. It causes environmental pollution. Also, the burning process of synthetic material is quite slow. It does not get completely burnt easily. It releases lots of poisonous fumes into the atmosphere when burned and causes air pollution.

**45. Explain how the use of plastics has a bad effect on the environment.**

Answer

Plastic pollution causes harm to humans, animals and plants through toxic pollutants. It can take hundreds or even thousands of years for plastic to break down so the environmental damage is long-lasting. It affects all organisms in the food chain from tiny species like plankton through to whale.

**46. Explain why the disposal of plastic wastes is a major problem. Give two reasons only.**

Answer

Plastic is a non-biodegradable material and takes a lot of time to decompose naturally. The plastic waste is harmful for animals who might eat it, can cause severe air pollution on burning, and can create a heap of waste which will not decompose, hence disposal of plastic waste is a major problem.

**47. What are the various ways to save the environment from excessive plastic wastes?**

Answer

- Reduce plastic bags and use cloth or jute bags.
- Use metal or steel storage containers

**48. How do carelessly thrown plastic bags (polythene bags) affect:**

**(a) dirty water drains and sewers?**

**(b) animals (such as cows)?**

Answer

(a) When thrown in the water drains or in sewers it results in choking of the drains. Therefore, we must avoid the use of plastic as much as possible.

(b) Plastic bags thrown in the garbage can be swallowed by the animals such as cows. It can result in choking their respiratory system and can be fatal. Therefore, we must avoid the use of plastic as much as possible.

**49. What is meant by the 3R's principle in the context of the use of plastics?**

Answer

Reduce

- We can reduce the use of plastic containers for storing food and other items and use more durable materials like metal.

Reuse

- We can reuse the plastic bags whenever possible, keeping safety and hygiene in mind.

Recycle

- We can give the old plastic chairs and jars for a recycle and support the cause by using recycled items.

**50. State the various ways in which we can avoid (or minimize) the use of plastics.**

Answer

Carry a reusable bottle

Say no to plastic straws

Take a reusable coffee cup

Avoid excessive food packaging

Usage of cloth or jute bags