

Synthetic Fibres and Plastics

A. Fibres

1. Names of some of the fibres are written below:

- I. Nylon
- II. Silk
- III. Lycra
- IV. Polyester

The odd one among these is

- a I
- b II
- c III
- d IV

2. A polyester fabric should not be ironed with a hot iron because

- a it is a waste of electricity
- b the polyester will melt
- c the polyester will catch fire
- d the polyester will lose its colour

3. When Rohan burnt a small piece of her mother's old (rejected) cotton saree, he got the smell of burning paper. This is because

- a cotton is obtained from plants
- b paper is obtained from plants
- c both cotton and paper are obtained from plants
- d paper is obtained from cotton plants

4. The first synthetic fibre, made its debut in the United States as a replacement for silk, just in time for World War II rationing is

- a polyester
- b rayon
- c nylon
- d spandex

5. One day when Sohan was in the market for buying vegetables, rain started, but he was not afraid as he was wearing such a cloth which protect him from being wet.

Can you guess which of the following materials were used for making his clothes?

- a Polyester
- b Orlon
- c Cotton
- d All of the above

6. The fibres obtained from natural source are called natural fibres and that obtained from artificial source are called synthetic fibres. Here, with some fibres alongwith their source are given.

Material	Natural source	Artificial source
I. Acrylic	×	✓
II. Rayon	✓	×
III. Nylon	×	✓
IV. Cellulose	×	✓

Key ✓ belongs to
× not belong to

The correct matching is

- a I and III
- b II and III
- c III and IV
- d I, II and III

7. What is the selvedge of the fabric?

It is

- a the rough edge where the fabric has been cut
- b the fabric left over when products have been cut out
- c the profit made by the fabric manufacturer
- d the finished off edges of the fabric

8. **Assertion (A)** A nylon thread is stronger than steel wire.

Reason (R) A steel thread can support more weight than nylon.

- a Both A and R are true and R is the correct explanation of A
- b Both A and R are true, but R is not the correct explanation of A
- c A is true, but R is false
- d R is true, but A is false

9. Match the fabrics given in Column A with their area of application (use) given in Column B and choose the correct answer using the codes given below.

Column A	Column B
p. Polyester	I. Cheap silk like clothes
q. Rayon	II. Parachute and stocking
r. Nylon	III. Shrouds of Egyptian pharaohs
s. Flax	IV. Non-wrinkable fabric

Codes

- | | | | | |
|---|----|-----|-----|-----|
| | p | q | r | s |
| a | IV | I | II | III |
| b | I | IV | II | III |
| c | IV | I | III | II |
| d | IV | III | II | I |

10. Names of some of the fibres are given below:

- I. Wool
- II. Polyamide
- III. Cotton
- IV. Lycra
- V. Linen

Which of these are not considered as staple fibres?

- a I and III
- b II and IV
- c I, III and V
- d II, III and IV

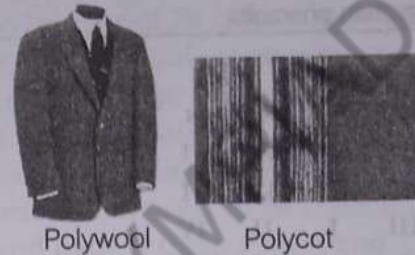
11. Read the following statements about wool.

- I. It dries quickly.
- II. It is attacked by moths.
- III. It is warm to wear.
- IV. It creases easily.

Which of the above statements are true?

- a I and II
- b II and III
- c II and IV
- d III and IV

12. Consider the following fabrics.



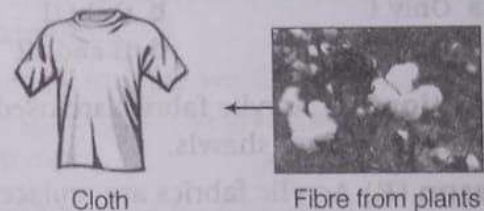
Some statements relating to these fabrics are as follow:

- I. They are less expensive.
- II. They have combined properties of each fibre.
- III. They are made by blending synthetic fibres with natural fibres.

The correct statement(s) is/are

- a I and II
- b II and III
- c Only II
- d I, II and III

13. Consider the following figures.



These clothes are the first choice of most of the persons generally in summers because the polymer from which these are prepared is

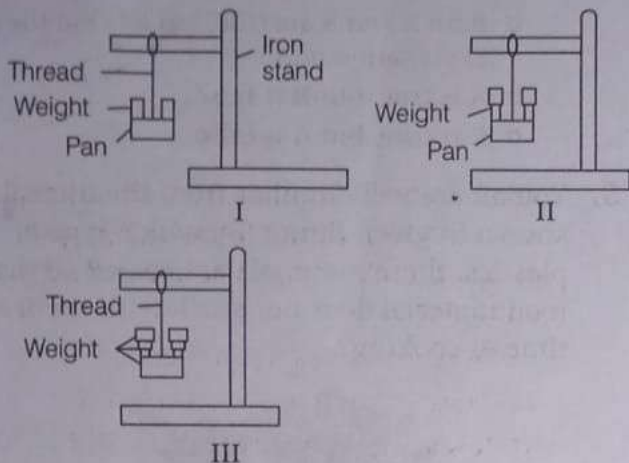
- a strong, heavy and absorbs perspiration
- b transparent, absorbs dye and has low tensile strength
- c light, soft, absorbs dyes and perspiration
- d good conductor of heat

14. Classifying fabrics is based on the origin of the fibres which can be natural or synthetic.

Which of the following is not a natural fibre?

- a Fibres from cocoons
- b Fibres from fish scales
- c Fibres from plant seeds
- d Fibres from animal coats

22. Rahul has threads of cotton, wool and nylon. To check their tensile strength, he take one thread of each fibre and cut into a thread of 35 cm. Now, he took one of the threads, tied its one end with the hook of an iron stand and a pan on the other end. The weights of 100 g, 200 g, 500 g, 700 g, 1 kg, etc were applied until the thread was broken. The same experiment was repeated with two other threads.



On the basis of the above experiment, the threads used in case I, II and III are

	I	II	III
a	Nylon	Wool	Cotton
b	Cotton	Wool	Nylon
c	Wool	Cotton	Nylon
d	Nylon	Cotton	Wool

23. State 'T' for true and 'F' for false.
- Silk absorbs more water than wool.
 - Natural fibres are not resistant towards moths as well as wrinkles.
 - Terylene, a synthetic fibre, can be used instead of wool.
 - Silk is the most expensive natural fibre.
 - The capacity of fibre to withstand force is more in cotton than in nylon.

Codes

	I	II	III	IV	V
a	T	T	F	F	T
b	T	F	T	F	T
c	T	T	F	T	F
d	F	T	F	T	F

24. To fill in the blanks, choose the correct set of words.

Cotton is the polymer of ____ (P) ____ and is used for making shirts because it is ____ (Q) ____ to wear and ____ (R) ____ well. The polyester fibres like dacron and terylene are manufactured from petroleum products.

The latter are preferred over the former one as it does not need ____ (S) ____ and ____ (T) ____ quickly after washing.

	P	Q	R	S	T
a	cellulose	cool	dries	ironing	dyes
b	cellulose	cool	dyes	ironing	dries
c	orlon	dried	cool	shrinking	dyes
d	cellulose	cool	costly	high cost	dries

Direction (Ques. 25-27) Read the passage and answer the questions that follow:

Out of several type of Xs from which Y is obtained, some may be of natural origin while others are of synthetic origin. These two types of Xs differ in their behaviour towards water, heat etc. Moreover, their weight bearing capacity is also differ. Rohan wants to test all these differences, so he collected threads of some Xs and named them P, Q, R and S. He took dry weight of each and kept each one in water for some time. Then, he again took weight of each in wet state.

The results observed by him are as follows:

- Weight of Q is 30 g.
- Weight of P is less than that of Q but more than that of S, which in turn, more than R.

Further, he checked the weight bearing capacity in each case by applying some loads and get the following result:

Load bearing capacity of Q is more than that of P, but not maximum.

If Xs used by him are wool, nylon, cotton and silk, then try to help him to give answer of the following questions:

25. X and Y stand for respectively

- wool and paper
- fibre and cloth
- cloth and fibre
- paper and wool

26. The P, Q, R and S respectively are

	P	Q	R	S
a	wool	cotton	silk	nylon
b	cotton	wool	nylon	silk
c	cotton	wool	silk	nylon
d	wool	cotton	nylon	silk

27. Load bearing capacity was found maximum in case of

- P
- Q
- R
- S

B. Plastics

1. The table lists information about five plastics.

Plastic	Properties
Polyethylene terephthalate (PET) polyester	Transparent, tough, resists moisture and gas
High density polyethylene (HDPE)	Translucent, tough, resists moisture, chemicals and gas
Polyvinyl chloride (PVC)	Transparent, tough, resists grease, oil and chemicals
Low density polyethylene (LDPE)	Transparent, tough, resists moisture, flexible
Polypropylene (PP)	Transparent, tough, resists grease, oil, chemicals and heat

Which property of HDPE distinguishes it from the other four plastics?

- a Flexibility
- b Translucent
- c Resistance to moisture
- d Resistance to grease and oil

2. Plastics have transformed modern society providing attractive benefits but also befouling waterways and aquifers depleting petroleum supplies and disrupting human health.



4 R's rule is followed to overcome these situations. Which of the following is not a correct meaning of any of the R's?

- a Reuse
- b Recycle
- c Reject
- d Reduce

3. Out of the following materials, what are the materials used as a substitute for glass and wool, respectively?

Nylon, polyester, lycra, linen, polyamide, acrylic, PET, rayon

- a Polyamide, polyester
- b Polyamide, acrylic
- c PET, acrylic
- d Lycra, nylon

4. **Assertion (A)** Thermoplastics can be remoulded.

Reason (R) They do not undergo any change in their composition when they are heated and remoulded.

- a Both A and R are true and R is the correct explanation of A
- b Both A and R are true, but R is not the correct explanation of A
- c A is true, but R is false
- d R is true, but A is false

5. You all are well familiar from the utensils shown in given figure. By which type of plastics, these materials are coated so that the food material does not stuck with them at the time of cooking?



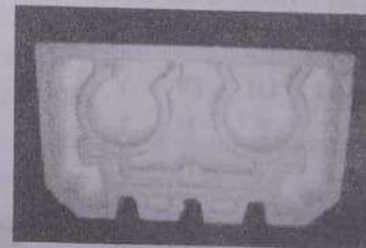
Non-sticky cookware

- a Teflon
- b PVC
- c Polyethylene
- d All of these

6. The cookware shown in above question are generally recommended to heart patients. This is because they

- a do not absorb water
- b do not absorb oil
- c cook faster
- d are biodegradable

7. Whenever you are going to buy a television, fridge or computer, you found that all these are placed in a thick covering. Such a covering is shown in the following figure.



These packaging are made up of polymer, called polystyrene. Which property of this polymer makes it a good material for this purpose?

- a High water absorption tendency
- b Easy moulding on heating
- c High strength
- d None of the above

8. You are familiar with the following items.

- I. Raincoat
- II. Seat covers

In both of the above items, polymer of vinyl chloride is used. This polymer is chosen for such applications because

- a of its lower melting point and unreactive nature
- b of its higher melting point and very reactive nature
- c of its tendency to get rolled into thin sheets like polythene
- d of its tendency to get coated on a cloth base and tougher nature as compared to polythene

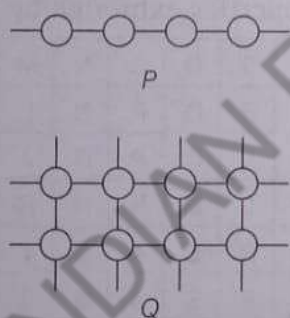
9. Consider the following statements.

- I. Synthetic polymers that can be heated and moulded into specific shapes.
- II. Natural polymers that are formed in living things.
- III. Polymers made from monomers like sugar.
- IV. The only type of synthetic fibres.

Which of the above best describes plastics?

- a I and IV
- b Only IV
- c Only I
- d II, III and IV

10. Consider the following figures and related statements.



- I. P shows a monomer whereas Q is the representation of the polymer of P.
- II. Only small circles represent the monomers that are interconnected to give a polymer.
- III. P is a linear polymer whereas Q is a cross-linked polymer.

The correct statements are

- a I and II
- b I and III
- c II and III
- d I, II and III

11. Differences between the thermoplastics and thermosetting plastics are mentioned below:

Thermoplastics	Thermosetting plastics
I. Gets deformed on heating.	Can be softened by heating.
II. They undergo some chemical change when heated.	They do not undergo chemical change on heating.
III. They can be moulded again and again.	They can be moulded only once.
IV. Toys, combs and various types of containers are manufactured from them.	Electrical items and kitchenwares are manufactured from them.

The correct difference(s) is/are

- a I and III
- b II and III
- c Only III
- d III and IV

12. Styrofoam cup is used to serve hot tea or coffee as it is

- I. a poor conductor of heat.
- II. highly flexible.
- III. easy to clean.

The correct reason(s) is/are

- a Only I
- b I and II
- c I and III
- d I, II and III

13. Electric plugs/switches/plug boards are made up of bakelite because of the fact that

- I. it is a good conductor of heat and electricity.
- II. it absorbs electric shock to save us from that.
- III. it gets heated very fast.
- IV. it can prevent possible fire in electrical insulations.

The correct statements are

- a I, III and IV
- b I and III
- c II and IV
- d III and IV

14. Which of the following properties would you consider while selecting a material for storing food items?

- I. It can resist high temperature.
- II. It should be corrosion resistant.
- III. It can be moulded into various shapes.
- IV. It should not conduct heat.

- a I and IV
- b II and III
- c I, II and IV
- d All of the given

15. Consider the following statements about plastics.

- I. In all plastics, the arrangement of monomers is not same.
- II. Melamine is a better plastic than other to resist fire and bear heat.
- III. Some plastics have cross-linked structure.
- IV. Although, plastics are more in number but their applications are limited.

The correct statements are

- a I and II
- b II, III and IV
- c I, II and III
- d III and IV

16. Generally, it was said that plastics are bad conductors of heat and electricity. People came to that conclusion from the following facts:

- I. Plastic core is present in refrigerators or freezers.
- II. Electrical wires are covered by a plastic covering.
- III. Handles of cooking pans are made up of plastics.
- IV. Plastics are used for making parachutes.

The correct facts are

- a I and II
- b I and III
- c I, II and III
- d I, II and IV

17. Consider the following statements (I-V) each with one or two blanks and choose the correct set that fit best to fill them.

- I. Bakelite is a ___1___ polymer that have ___2___ chains of monomers.
 - II. The electric fuse holders are made up of ___3___.
 - III. Plastics are ___4___ conductors of heat and electricity.
 - IV. Say no to ___5___ and say yes to ___6___ bags.
 - V. Most of the plastics are ___7___ but all of them cannot be ___8___.
- a 2-linear, 3-bakelite, 6-paper
 - b 1-thermosetting, 5-polythene, 7-biodegradable
 - c 1-thermoplastic, 2-cross-linked, 4-poor, 7-recyclable
 - d 2-cross-linked, 6-paper, 7-non-biodegradable, 8-recycled

18. Sort out the following into Group A (i.e. thermosetting plastics), Group B (i.e. thermoplastics), Group C (neither thermosetting nor thermoplastics).

- I. Teflon
- II. PET
- III. Polyvinyl chloride
- IV. Bakelite
- V. Melamine-urea resin
- VI. Phenol-formaldehyde resin
- VII. Rubber (natural)
- VIII. Polystyrene
- IX. Polypropylene
- X. Rubber (synthetic)
- XI. ABS rubber

- a Group A — IV, V, VI
Group B — I, II, III, VIII, IX
Group C — VII, X, XI
- b Group A — IV,
Group B — I, III, VII
Group C — V, VI
- c Group A — IV, V
Group B — II, III, XI
Group C — VII, X
- d Group A — IV, V, VI, VII
Group B — I, II, III, XI
Group C — No one

19. Plastics are very important materials for our day-to-day life. We completely depend upon plastics for our most of the work because of certain properties exhibited by them.

A	K	K	S	Q	O	N	M	T	D	P	O
X	P	Z	R	Q	P	N	L	R	A	O	A
F	O	N	X	O	P	O	J	E	D	C	A
G	J	M	L	M	N	N	H	N	C	O	D
X	E	O	R	E	A	C	T	I	V	E	B
P	H	U	E	S	A	O	I	C	B	K	L
P	X	L	D	T	B	N	K	H	B	O	M
Y	Z	D	U	R	C	D	A	E	A	N	N
N	A	A	C	O	D	U	R	A	B	L	E
N	N	B	E	N	D	C	N	V	O	O	X
J	P	L	I	G	H	T	U	Y	N	Q	P
X	O	E	J	O	T	O	S	R	W	Y	C
K	J	L	V	U	U	R	T	V	X	Z	D

How many properties of plastics are hidden in the above crossword puzzle?

- a 5
- b 7
- c 9
- d 14

2 Synthetic Fibres and Plastics

A. Fibres

- | | | | | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1. <i>b</i> | 2. <i>b</i> | 3. <i>c</i> | 4. <i>c</i> | 5. <i>a</i> | 6. <i>d</i> | 7. <i>d</i> | 8. <i>d</i> | 9. <i>a</i> | 10. <i>b</i> |
| 11. <i>b</i> | 12. <i>d</i> | 13. <i>c</i> | 14. <i>b</i> | 15. <i>c</i> | 16. <i>d</i> | 17. <i>a</i> | 18. <i>d</i> | 19. <i>b</i> | 20. <i>c</i> |
| 21. <i>c</i> | 22. <i>b</i> | 23. <i>d</i> | 24. <i>b</i> | 25. <i>b</i> | 26. <i>b</i> | 27. <i>c</i> | | | |

B. Plastics

- | | | | | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1. <i>b</i> | 2. <i>c</i> | 3. <i>c</i> | 4. <i>a</i> | 5. <i>a</i> | 6. <i>b</i> | 7. <i>b</i> | 8. <i>d</i> | 9. <i>c</i> | 10. <i>c</i> |
| 11. <i>c</i> | 12. <i>a</i> | 13. <i>c</i> | 14. <i>d</i> | 15. <i>c</i> | 16. <i>c</i> | 17. <i>d</i> | 18. <i>a</i> | 19. <i>b</i> | |