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EcoDesign in Textile sector

Unit 1: Materials: Natural and Man-Made Fibers

UNIT QUIZ



N°	Question	Result	Answ. 1	Answ. 2	Answ. 3	Answ. 4
1	As regards the textile fibers production, the environmental aspects are closely linked to various problems. Comparing environmental aspects and textile fibers is complex and not immediate.	T				
2	Natural fibers can come from:		from animal origin	from plant origin	from mineral origin	only from animal and plant origin
3	Man-Made fibers come from:		from petroleum sources	only from petroleum sources	from animal origin	only from animal origin
4	Man-Made fibers production is obtained only from a petroleum sources.	F				
5	The environmental impacts of man-made fiber production are always worse than those of natural fibers	F				
6	Cotton is one of the most important fibers worldwide used.	T				
7	The environmental aspects of cotton cultivation are:		water consumption	Chemicals use	Redevelopment of cultivate lands	The effects of transport from cultivation to the processing site
8	The cultivation of 1 kg of cotton can take up to 3800 liters of water.	T				
9	On average, about 2100 liters of water are consumed for the cultivation of 1 kg of cotton.	T				
10	The petroleum used for each kg of cotton ranges from 0.3 to 1 kg.	T				
11	A protein fiber comes from cotton	F				
12	By adopting appropriate measures, the cultivation of cotton can reduce the consumption of water by up to 91%.	T				
13	By adopting appropriate measures, the cultivation of cotton can reduce the residual toxicity on the fiber by up to 93%	T				



N°	Question	Result	Answ. 1	Answ. 2	Answ. 3	Answ. 4
14	The PED (Primary Energy Demand) value of cotton ranges between 5.8 and 15 Mega Joules per Kg.	T				
15	The use of genetically modified varieties for the cultivation of cotton, allows to reduce the use of pesticides steadily over time.	F				
16	The use of genetically modified varieties for the cultivation of cotton produces a lower quality fiber.	F				
17	The use of genetically modified varieties for growing cotton reduces running costs.	T				
18	Most of the wool production is a secondary product.	T				
19	A Merino sheep can produce up to 5 kg of shearing wool.	T				
20	Wool is always a poor quality product.	F				
21	There may be traces of pesticides on wool.	T				
22	Silk cultivation has high environmental impacts, especially in terms of pesticides and other chemical agents used	F				
23	The freshly sheared wool must be washed and degreased, which produces heavily contaminated waters	T				
24	The energy consumption used for the preparation of wool is 4/5 times lower than the Man-Made fibers	T				
25	The water consumption used for the preparation of wool is the same for the water consumption for the preparation of cotton.	F				
26	Cashmere wool is obtained thanks to a careful feeding of sheep.	F				
27	Alpaca wool is obtained from the Lama.	F				
28	Mohair is a type of finest wool.	T				
29	Wool types are:		Sisal	Alpaca	Angora	Kapok
30	For the production of Librarian fibers fertilizers and herbicides are used, but in much smaller quantities compared to the production of cotton.	T				



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31	Silk has a strong environmental impact, well documented by various researches.	F				
32	There is a cruelty free variant of silk in which the chrysalis is not killed.	T				
33	The environmental aspects of silk are related to:		use of fertilizers and herbicides	climate conditioning for the breeding of the bugs	intensive water consumption	intensive energy consumption
34	"Wild silk" (or peace silk) has discontinuous fibers, unlike traditional silk that has continuous fibers	T				
35	They are Liberian fibers:		Flax	Nettle	Sisal	Kapok
36	Liberian fibers can be used in a process of rehabilitation of contaminated lands with heavy metals for food cultivation	T				
37	Liberian fibers have an average energy consumption compared to the sector.	F				
38	Liberian fibers consume the same amount of water as cotton.	F				
39	Hemp is one of the fibers with the lowest environmental impact.	T				
40	The process of maceration of Liberian fibers can generate pollutants in wastewater.	T				
41	The PED value (Primary Energy Demand) of flax is about 20 MJ per Kg.	F				
42	The yield of Hemp cultivation can reach 6 tons per hectare.	T				
43	The yield of Hemp cultivation for fiber production is among the best of textile fibers.	T				
44	The nettle, as well as easily cultivable, can easily be processed in standard processes.	F				
45	Bamboo transformation processes can be both mechanical and chemical.	T				
46	The bamboo has high levels of pesticides and herbicides.	F				



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47	Kapok is the lightest fiber in nature	T				
48	A textile fiber can be extracted from the banana plant.	T				
49	A textile fiber can be extracted from the pineapple leaf.	T				
50	A textile fiber can be extracted from the fig leaf.	F				
51	A textile fiber can be extracted from the Agave Sisalana leaf.	T				
52	Natural fibers are biodegradable.	T				
53	Kapok is a fiber that is extracted from the homonymous plant's <i>phloem</i> .	F				
54	Kapok is a fiber derived from petroleum.	F				
55	They are fibers derived from petroleum:		Polyester	Viscose	Nylon	Lyocell
56	1 kg of polyester requires 109 MJ from non-renewable sources, of which 46 MJ for material and 63 MJ for energy.	T				
57	Water consumption for Man-Made fibers is much lower than natural fibers, sometimes it can tend towards 0.	T				
58	The polyester production causes significant environmental damage due to the release of harmful substances into the environment.	F				
59	The polyester is produced with terephthalic acid, dimethylterephthalate and ethylene glycol.	T				
60	Emissions from Polyester production may include: cobalt, manganese salts, sodium bromide, antimony oxide and titanium dioxide.	T				
61	Polyester is a biodegradable fiber	F				
62	Polyester can be chemically recycled.	T				
63	Nylon corresponds to a family of polymers.	T				
64	Kevlar is part of the Nylon family.	T				
65	Nylon requires less energy than Polyester.	F				
66	Nylon is a biodegradable polymer.	F				
67	The Nylon PED value (Primary Energy Demand) is 150 MegaJoules per Kg.	T				



N°	Question	Result	Answ. 1	Answ. 2	Answ. 3	Answ. 4
68	The production of Nylon is the most energy consuming of the textile sector	T				
69	The production of Nylon can produce nitrogen oxides.	T				
70	Acrylic production involves an aqueous suspension.	T				
71	Acrylic is derived from waste cellulose from natural sources.	F				
72	The Acrylic production process can have a final step in an acidic bath to give it antistaticity.	T				
73	The Acrylic PED value (Primary Energy Demand) is 140 Megajoules per Kg.	T				
74	Viscose is a fiber derived from petroleum.	F				
75	Viscose can come from:		cotton waste	forest reserves	waste from agricultural productions	waste from food production
76	The raw material of the Viscose has a neutral carbon footprint.	T				
77	The air emissions of Viscosa production include sulfur, nitrogen oxides, carbon disulfide and hydrogen sulfide	T				
78	Viscosa production can produce strong pollutants in wastewater.	T				
79	Biopolymers derive from annual renewable crops, thus resulting carbon neutral.	T				
80	Biopolymers, because they derive from renewable sources, do not generate negative environmental effects in their production cycle.	F				
81	PLA is similar to Polyester, but with less overall environmental impact.	T				
82	Despite the similarity, PLA requires more dyeing steps than the polyetherether.	T				



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83	The greater sustainability of PLA compared to the Polyester concerns:		energy saving	less air emissions	lower emissions into the water	use of renewable resources instead of non-renewable resources
84	The Lyocell production, thanks to a continuous recycling of solvents, does not involve contaminated waste water.	T				
85	Lyocell is:		biodegradable	renewable	lighter than other Man-Made fibers	washable at low temperature
86	There is a yarn derived from soybean oil.	T				
87	Research is developing fibers from natural origins that can replace Man-Made fibers.	T				
88	Man-made fibers of protein origin were developed before the Second World War.	T				
89	In the processing of Man-Made fibers of protein origin can be used:		Soybean oil	Enzymes	Polyvinyl alcohol	other toxic agents
90	Recycled fibers have significantly lower environmental impact values than virgin fibers	T				
91	Textile materials can be recycled from both the different stages of processing and from end-of-life goods	T				
92	The advantages of recycled fibers are:		easy dyeing fibers	low environmental impact	good overall quality level	low use of chemicals
93	Fibers can be generated from plastic bottles by a mechanical process.	T				
94	Natural fibers are recyclable through chemical processes that are able to dissolve even the mixtures of different fibers	F				
95	Some synthetic fibers can be recycled through chemical processes, with the breakup of the polymer and subsequent repolymerization.	T				



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96	In the assessment of the environmental impacts of the fibers, the main themes are:		aspects of cultivation, in particular water consumption and use of chemical agents	aspects of Petroleum extraction	ethical issues, in particular replacing cultivated land with agricultural food production	depletion of marine water resources
97	The functional unit of reference for the production of fibers is 1 Kg of useful working fiber.	T				
98	Man-Made fibers have higher values than:		greenhouse gases	energy consumption	water consumption	eutrophication
99	Natural fibers have higher values than:		greenhouse gases	energy consumption	water consumption	eutrophication
100	The elements to be taken into consideration during the design phase of a sustainable product are:		soil consumption	soil conservation	greenhouse gases emissions	energy consumption

