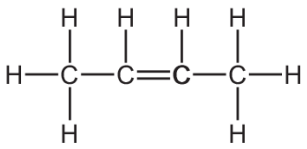
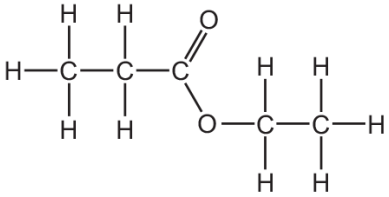
01. 0620_s16_qp_23 Q: 37

The structure of an alkene and the structure of an ester are shown.

P



Q



What are the names of P and Q?

	P	Q
A	but-1-ene	ethyl propanoate
B	but-1-ene	propyl ethanoate
C	but-2-ene	ethyl propanoate
D	but-2-ene	propyl ethanoate

14.8 Polymers

02. 0620_m21_qp_22 Q: 39

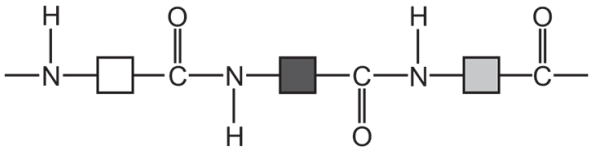
Molecule 1 undergoes a process to make molecule 2.

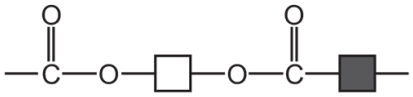
Which row describes the molecules and the process?

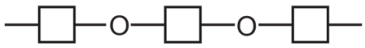
	molecule 1	process	molecule 2
A	monomer	cracking	polymer
B	monomer	polymerisation	polymer
C	small molecule	polymerisation	monomer
D	small molecule	cracking	monomer

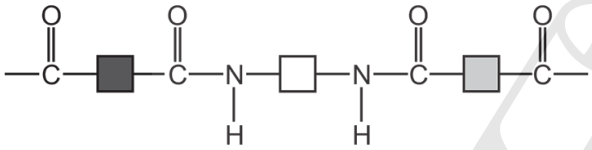
03. 0620_m21_qp_22 Q: 40

Which structure represents a protein?

A 

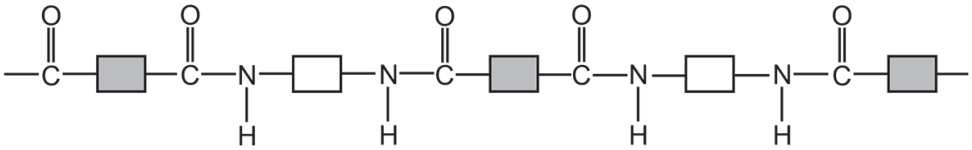
B 

C 

D 

04. 0620_s21_qp_21 Q: 39

The structure of a synthetic polymer is shown.



The structure shows that it is a .....1..... . It is formed by .....2..... polymerisation.

Which words complete gaps 1 and 2?

	1	2
A	polyamide	addition
B	polyamide	condensation
C	polyester	addition
D	polyester	condensation

---

05. 0620_s21_qp_21 Q: 40

Which substance is a natural polymer?

A ethene

B *Terylene*

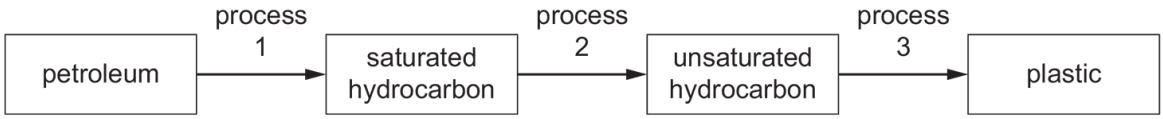
C nylon

D protein

---

06. 0620_s21_qp_22 Q: 38

The flow chart shows how petroleum may be turned into a plastic.



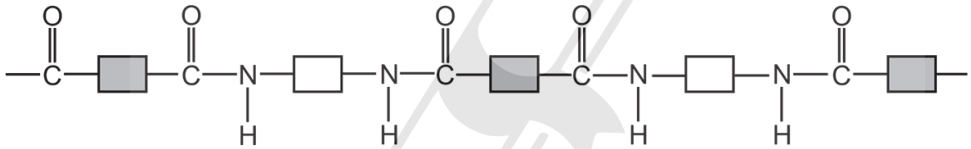
What are processes 1, 2 and 3?

	process 1	process 2	process 3
A	cracking	fractional distillation	polymerisation
B	cracking	polymerisation	fractional distillation
C	fractional distillation	cracking	polymerisation
D	fractional distillation	polymerisation	cracking

---

07. 0620_s21_qp_22 Q: 39

The structure of a synthetic polymer is shown.



The structure shows that it is a .....1..... . It is formed by .....2..... polymerisation.

Which words complete gaps 1 and 2?

	1	2
A	polyamide	addition
B	polyamide	condensation
C	polyester	addition
D	polyester	condensation

---

08. 0620_s21_qp_22 Q: 40

Which substance is a natural polymer?

A ethene

B *Terylene*

C nylon

D protein

---

09. 0620_s21_qp_23 Q: 40

Which substance is a natural polymer?

A ethene

B *Terylene*

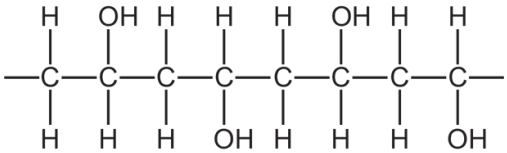
C nylon

D protein

---

10. 0620_w21_qp_21 Q: 37

Part of the structure of a very large molecule is shown.



Which term describes the small unit used to make this molecule?

A hydrocarbon

B monomer

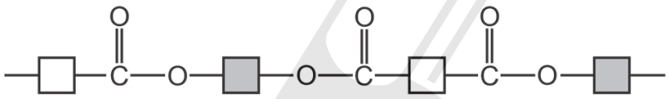
C polymer

D saturated

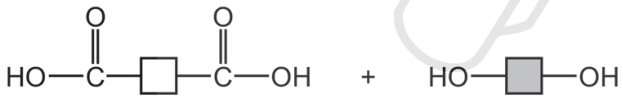
---

11. 0620_w21_qp_21 Q: 40

The diagram shows the partial structure of *Terylene*.



From which pair of compounds is it made?

A 

B 

C 

D 

---

12. 0620_w21_qp_22 Q: 39

Which polymers have the same linkage between monomer units?

A carbohydrate and polyamide

B carbohydrate and polyester

C protein and polyamide

D protein and polyester

---

13. 0620_w21_qp_23 Q: 39

Proteins and starch are natural polymers.

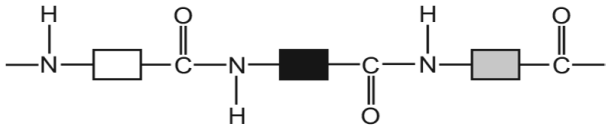
Which row identifies the method of polymerisation of proteins and starch?

	proteins	starch
A	addition	addition
B	condensation	condensation
C	addition	condensation
D	condensation	addition

---

14. 0620_m20_qp_22 Q: 40

The structure of a polymer is shown.



Which statements about the polymer are correct?

1 The polymer is nylon.

2 The polymer is formed by condensation polymerisation.

3 There are ester linkages between the monomers.

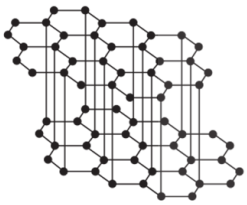
A 1 and 2 **B** 2 and 3 **C** 2 only **D** 3 only

---

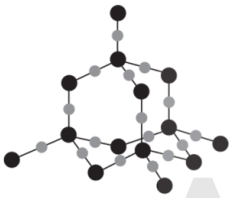
15. 0620_p20_qp_20 Q: 40

Which structure represents a polymer?

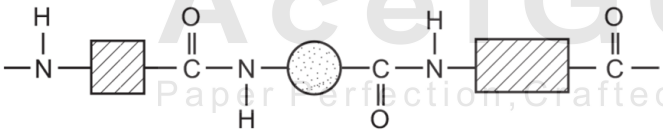
A



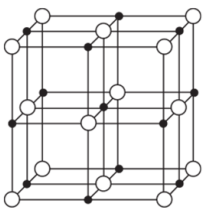
B



C



D



16. 0620_s20_qp_21 Q: 40

Which polymers or types of polymer are synthetic?

1 carbohydrates
2 nylon
3 proteins
4 *Terylene*

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

---

17. 0620_s20_qp_22 Q: 40

Which substances are natural polymers?

1 proteins
2 carbohydrates
3 nylon
4 poly(ethene)

A 1 and 2 **B** 1 and 3 **C** 2 and 3 **D** 3 and 4

---

18. 0620_s20_qp_23 Q: 40

Which statement about carbohydrates and proteins is correct?

A Carbohydrates and proteins are constituents of food.

B Carbohydrates and proteins are natural polymers used to make larger molecules called monomers.

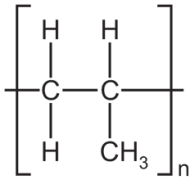
C Carbohydrates and proteins are synthetic polymers.

D Carbohydrates and proteins cause pollution as they are non-biodegradable.

---

19. 0620_w20_qp_21 Q: 40

The structure of a polymer is shown.



Which monomer forms this polymer?

A ethane

B ethene

C propane

D propene

20. 0620_w20_qp_22 Q: 39

Which statement about nylon and *Terylene* is correct?

A Nylon and *Terylene* are made from monomers with C=C bonds.

B Nylon and *Terylene* contain the same linkage.

C Nylon is a polyester.

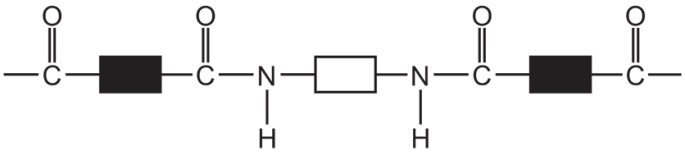
D *Terylene* is made from two different monomers.

---

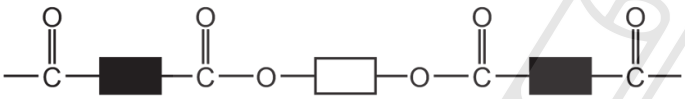
21. 0620_w20_qp_22 Q: 40

Which diagram represents the structure of a protein?

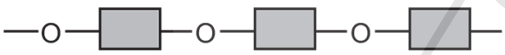
A



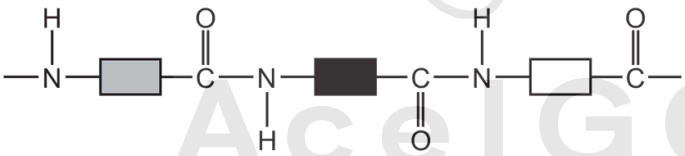
B



C



D



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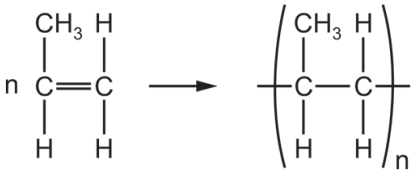
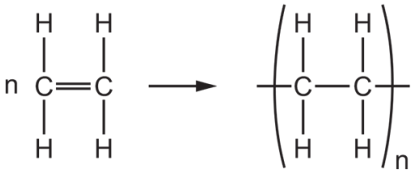
22. 0620_w20_qp_23 Q: 39

Which equation represents the formation of poly(propene) from propene?

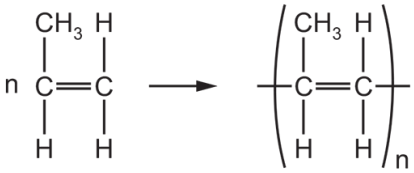
A



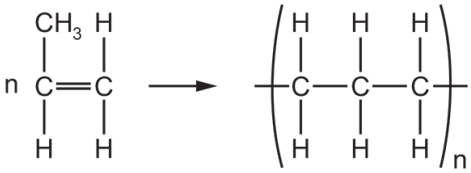
B



C



D



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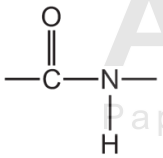
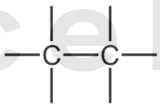
23. 0620_w20_qp_23 Q: 40

Which type of linkage joins the amino acids in a protein?

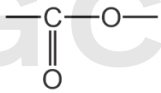
A



B



C

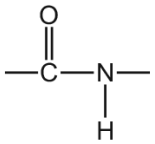


D

---

24. 0620_m19_qp_22 Q: 40

Which statement about polymers is correct?

A Nylon contains the  linkage.

B Nylon is a polyester.

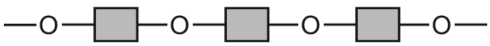
C Propane can be polymerised by addition polymerisation.

D The linkage in *Terylene* contains a carbon-carbon double bond.

---

25. 0620_s19_qp_21 Q: 40

The structure of a polymer is shown.



Which type of polymer is shown and by which process is it formed?

	type of polymer	formed by
A	carbohydrate	addition polymerisation
B	carbohydrate	condensation polymerisation
C	polyester	addition polymerisation
D	polyester	condensation polymerisation

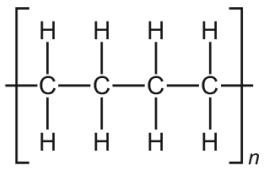
---

26. 0620_s19_qp_22 Q: 40

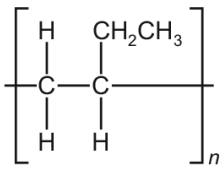
But-1-ene has the structure $CH_3CH_2CH{=}CH_2$.

What is the structure of poly(but-1-ene)?

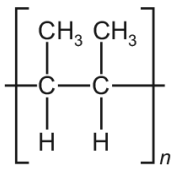
A



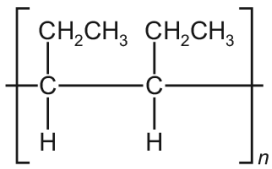
B



C



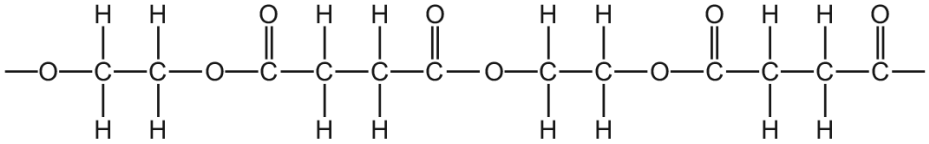
D



---

27. 0620_s19_qp_23 Q: 40

A section of a polymer is shown.



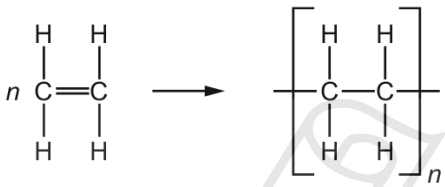
How many different types of monomer units formed this section of polymer?

A 1 **B** 2 **C** 3 **D** 4

---

28. 0620_w19_qp_21 Q: 39

The diagram shows the structure of a monomer and of the polymer made from it.



What are the monomer and polymer?

	monomer	polymer
A	ethane	poly(ethane)
B	ethane	poly(ethene)
C	ethene	poly(ethane)
D	ethene	poly(ethene)

---

29. 0620_w19_qp_21 Q: 40

Which polymers possess the same linkage?

A nylon and protein

B protein and starch

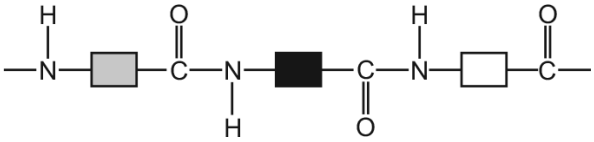
C starch and nylon

D nylon and *Terylene*

---

30. 0620_w19_qp_22 Q: 40

The structure of a naturally occurring polymer, X, is shown.



What is X?

A an amino acid

B a carbohydrate

C a protein

D a sugar

---

31. 0620_w19_qp_23 Q: 40

Proteins and starch are both natural polymers.

Both proteins and starch are hydrolysed by dilute acids.

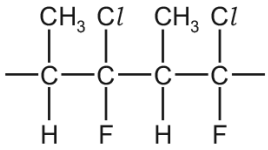
What are the products of hydrolysis of proteins and of starch?

	products of hydrolysis of proteins	products of hydrolysis of starch
A	amines and carboxylic acids	simple sugars
B	amines and carboxylic acids	alcohols and carboxylic acids
C	amino acids	simple sugars
D	amino acids	alcohols and carboxylic acids

---

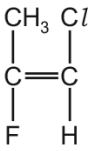
32. 0620_m18_qp_22 Q: 40

The structure of a chlorofluorocarbon polymer is shown.

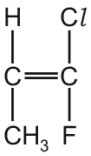


Which monomer is used to make this polymer?

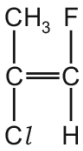
A



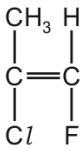
B



C



D



---

33. 0620_s18_qp_21 Q: 40

Which row describes addition polymerisation and condensation polymerisation?

	addition polymerisation	condensation polymerisation
A	monomers have a C=C double bond and the polymer is the only product	monomers have a C=C double bond and the polymer is the only product
B	monomers have a C=C double bond and the polymer is the only product	the monomers react to form the polymer and a small molecule
C	the monomers react to form the polymer and a small molecule	monomers have a C=C double bond and the polymer is the only product
D	the monomers react to form the polymer and a small molecule	the monomers react to form the polymer and a small molecule

---

34. 0620_s18_qp_22 Q: 40

Which two compounds react together to form a condensation polymer?

A $HOCH_2CH_2OH$ and CH_3COOH

B $HOCH_2CH_2OH$ and CH_3NH_2

C $HOCH_2CH_2OH$ and $H_2NCH_2CH_2NH_2$

D $HOCH_2CH_2OH$ and $HOOCCH_2CH_2COOH$

---

35. 0620_s18_qp_23 Q: 40

A polymer linkage contains carbon, hydrogen, nitrogen and oxygen atoms.

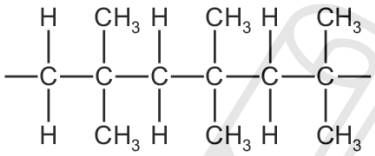
Which row about the polymer is correct?

	type of polymer	formed by
A	polyamide	addition polymerisation
B	polyamide	condensation polymerisation
C	polyester	addition polymerisation
D	polyester	condensation polymerisation

---

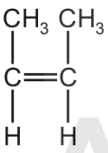
36. 0620_w18_qp_21 Q: 40

The structure of a polymer is shown.

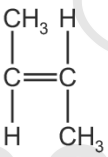


Which monomer is used to make this polymer?

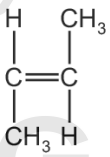
A



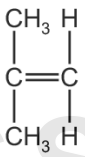
B



C



D



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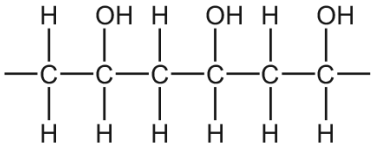
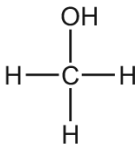
37. 0620_w18_qp_22 Q: 40

The structure of an addition polymer is shown.

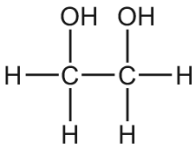


Which monomer is used to make this polymer?

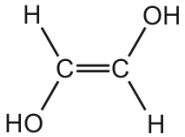
A



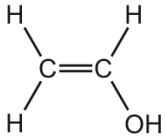
B



C



D



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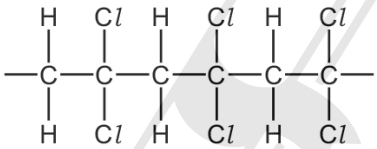
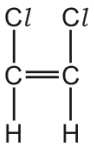
38. 0620_w18_qp_23 Q: 40

The structure of a polymer is shown.

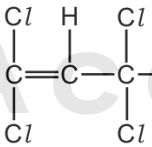


Which monomer is used to make this polymer?

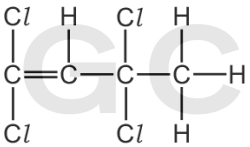
A



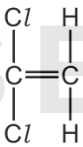
B



C



D



---

39. 0620_m17_qp_22 Q: 40

Which pair of compounds reacts to form a condensation polymer?

A CH_3COOH and $C_2H_5NH_2$

B $HCOOH$ and HOC_2H_4OH

C $HOC_6H_{12}OH$ and $HOOCC_3H_6COOH$

D $H_2NC_2H_4NH_2$ and HOC_3H_6OH

---

40. 0620_s17_qp_21 Q: 40

Keratin is a protein that is found in human hair.

Keratin is chemically broken down to produce amino acids.

What is the name of this chemical process?

A catalysis

B hydration

C hydrolysis

D polymerisation

---

41. 0620_s17_qp_22 Q: 40

Polyesters and polyamides are types of synthetic polymer.

Which statements are correct?

1 They are made by addition polymerisation.

2 They are made by condensation polymerisation.

3 The monomers from which they are made are unsaturated hydrocarbons.

4 The monomers from which they are made contain reactive functional groups at their ends.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

---

42. 0620_s17_qp_23 Q: 40

How can the amino acids in a protein be separated and identified?

A Add a locating agent to the protein.

B Hydrolyse the protein and then use chromatography.

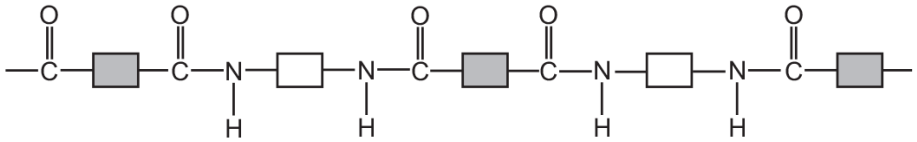
C Polymerise the protein and then add a locating agent.

D Use chromatography on a solution of the protein.

---

43. 0620_w17_qp_21 Q: 40

The structure of a synthetic polymer is shown.



The structure shows that it is a .....1..... . It is formed by .....2..... polymerisation.

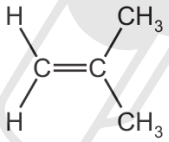
Which words complete gaps 1 and 2?

	1	2
A	polyamide	addition
B	polyamide	condensation
C	polyester	addition
D	polyester	condensation

---

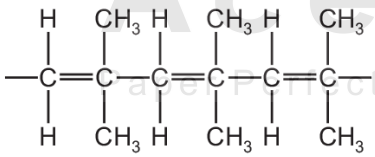
44. 0620_w17_qp_22 Q: 40

A polymer can be made from methyl propene.

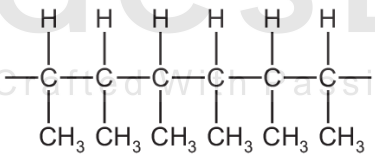


Which diagram shows the structure of the polymer?

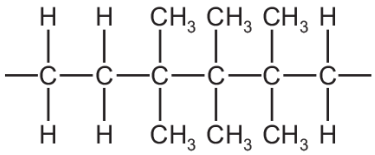
A



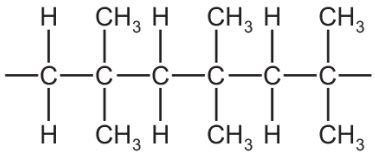
B



C



D



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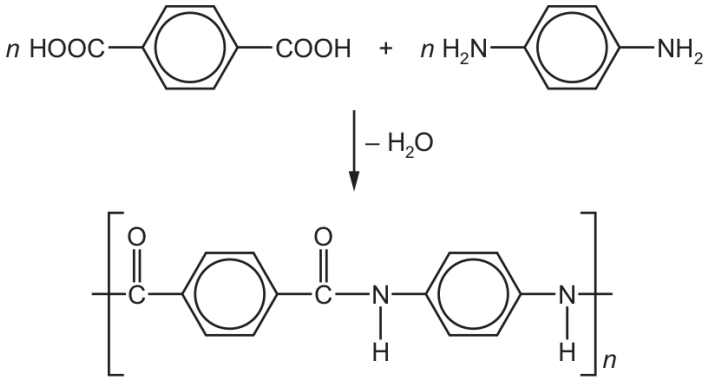
46. 0620_w17_qp_23 Q: 40

The equation shows the formation of a polymer called *Kevlar*.



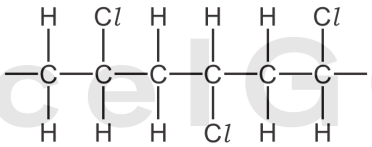
Which row describes *Kevlar*?

	how the polymer is formed	type of polymer
A	addition polymerisation	polyamide
B	addition polymerisation	polyester
C	condensation polymerisation	polyamide
D	condensation polymerisation	polyester

---

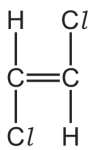
46. 0620_m16_qp_22 Q: 39

The partial structure of an addition polymer is shown.

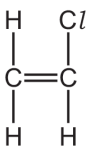


What is the structure of the monomer used to make this polymer?

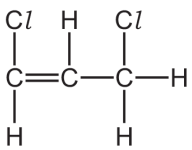
A



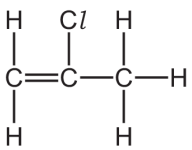
B



C



D



---

47. 0620_m16_qp_22 Q: 40

Which statement about polymers is correct?

A Addition polymers are all biodegradable.

B Condensation polymers can all be hydrolysed to give amino acids.

C Condensation polymers only exist in nature.

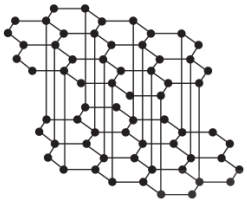
D Forming addition polymers produces only one product.

---

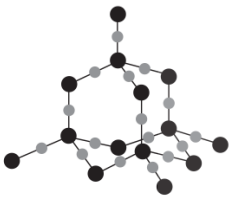
48. 0620_p16_qp_20 Q: 40

Which structure represents a polymer?

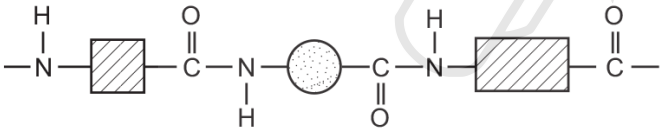
A



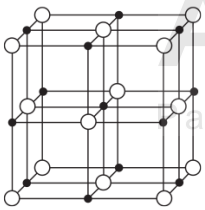
B



C



D



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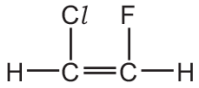
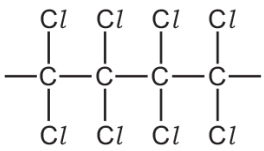
49. 0620_s16_qp_21 Q: 39

The structure of a monomer is shown.

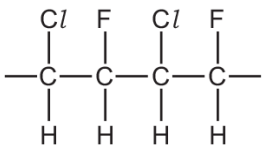


Which polymer can be made from this monomer?

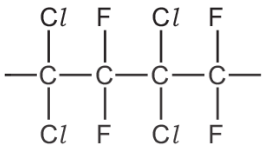
A



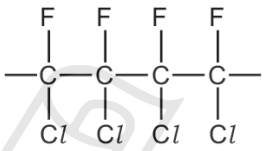
B



C



D



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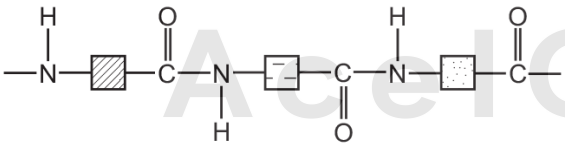
50. 0620_s16_qp_21 Q: 40

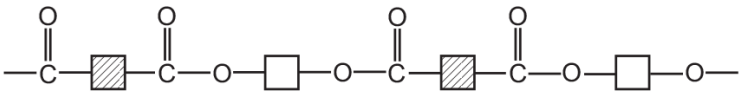
Which formula represents a polyester?

A

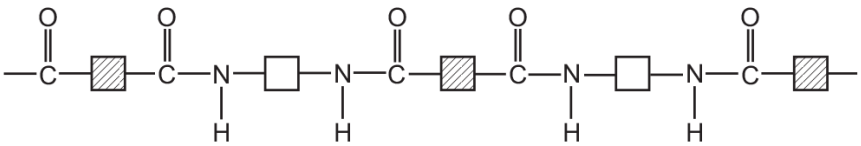
B



C



D



51. 0620_s16_qp_22 Q: 39

In which row are the monomer and polymer chain correctly matched?

	monomer	part of the polymer chain
A	$CH_3CH{=}CHCH_3$	$–CH(CH_3)–CH(CH_3)–CH(CH_3)–CH(CH_3)–$
B	$CH_2{=}CHCl$	$–CHCl–CHCl–CHCl–CHCl–$
C	$CH_3CH{=}CH_2$	$–CH_3–CH–CH_2–CH_3–CH–CH_2–$
D	$CH_2{=}CHCH_2CH_3$	$–CH_2–CH_2–CH_2–CH(CH_2CH_3)–$

---

52. 0620_s16_qp_22 Q: 40

Which two polymers have the same linkages bonding the monomers together?

A nylon and complex carbohydrate

B nylon and protein

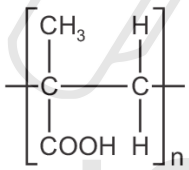
C *Terylene* and complex carbohydrate

D *Terylene* and protein

---

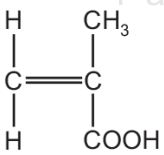
53. 0620_s16_qp_23 Q: 39

A polymer has the formula shown.

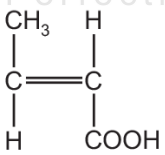


From which monomers can it be formed?

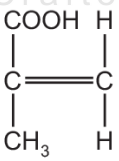
R



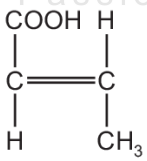
S



T



U



A R and S **B** R and T **C** S and U **D** T and U

---

54. 0620_s16_qp_23 Q: 40

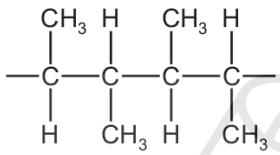
Which row shows a natural polymer with the same linkages as a synthetic polymer?

	natural polymer	synthetic polymer
A	complex carbohydrate	nylon
B	complex carbohydrate	*Terylene*
C	protein	nylon
D	protein	*Terylene*

---

55. 0620_w16_qp_21 Q: 39

The partial structure of addition polymer X is shown.



Which monomer is used to form polymer X?

A $CH_2=CH_2$

B $CH_3CH=CH_2$

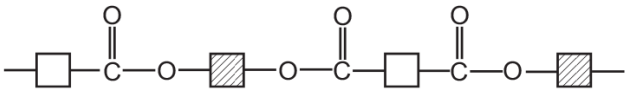
C $CH_3CH=CHCH_3$

D $CH_3CH_2CH=CH_2$

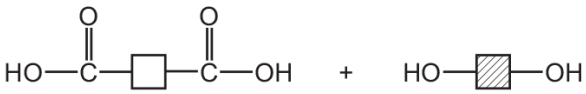
---

56. 0620_w16_qp_21 Q: 40

The diagram shows the partial structure of *Terylene*.



From which pair of compounds is it made?

A 

B 

C 

D 

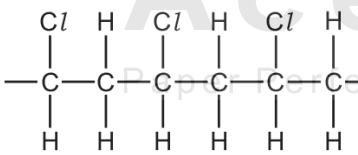
---

57. 0620_w16_qp_22 Q: 39

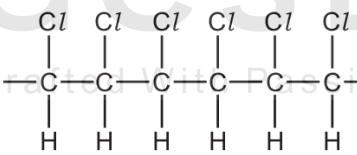
Chloroethene, CH_2=CHCl, can be polymerised.

Which diagram represents a section of the polymer?

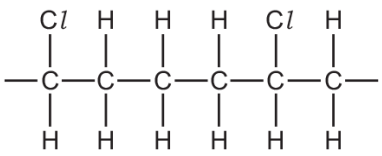
A



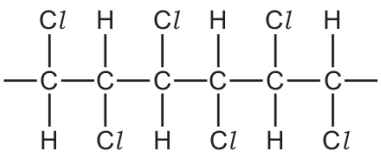
B



C



D



58. 0620_w16_qp_22 Q: 40

Terylene is a synthetic polymer.

Which statement about *Terylene* is **not** correct?

A It contains amide linkages.

B It contains carbon and oxygen atoms.

C It is made from small units called monomers.

D It is formed by condensation polymerisation.

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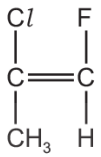
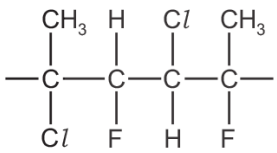
59. 0620_w16_qp_23 Q: 39

The organic compound shown can be polymerised.

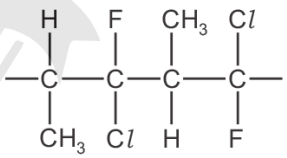


Which diagram represents a section of the polymer?

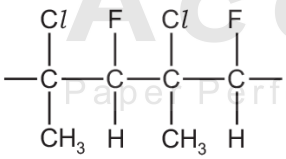
A



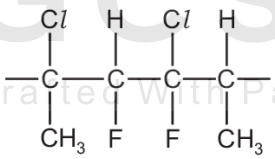
B



C



D



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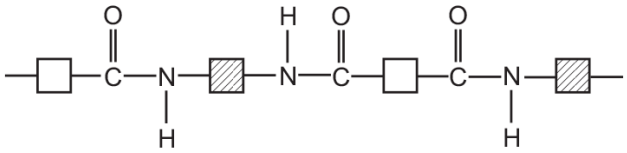
60. 0620_w16_qp_23 Q: 40

The partial structure of a polymer is shown.



Which type of polymer is represented?

A a carbohydrate

B a polyamide

C a polyester

D an addition polymer

SN	Paper	Q. No.	Answer
01	0620_s16_qp_23	37	C
02	0620_m21_qp_22	39	B
03	0620_m21_qp_22	40	A
04	0620_s21_qp_21	39	B
05	0620_s21_qp_21	40	D
06	0620_s21_qp_22	38	C
07	0620_s21_qp_22	39	B
08	0620_s21_qp_22	40	D
09	0620_s21_qp_23	40	D
10	0620_w21_qp_21	37	B
11	0620_w21_qp_21	40	A
12	0620_w21_qp_22	39	C
13	0620_w21_qp_23	39	B
14	0620_m20_qp_22	40	C
15	0620_p20_qp_20	40	C
16	0620_s20_qp_21	40	D
17	0620_s20_qp_22	40	A
18	0620_s20_qp_23	40	A
19	0620_w20_qp_21	40	D
20	0620_w20_qp_22	39	D
21	0620_w20_qp_22	40	D
22	0620_w20_qp_23	39	A
23	0620_w20_qp_23	40	A
24	0620_m19_qp_22	40	A
25	0620_s19_qp_21	40	B
26	0620_s19_qp_22	40	A
27	0620_s19_qp_23	40	B
28	0620_w19_qp_21	39	D
29	0620_w19_qp_21	40	A
30	0620_w19_qp_22	40	C
31	0620_w19_qp_23	40	C
32	0620_m18_qp_22	40	B
33	0620_s18_qp_21	40	B
34	0620_s18_qp_22	40	D
35	0620_s18_qp_23	40	B
36	0620_w18_qp_21	40	D
37	0620_w18_qp_22	40	D
38	0620_w18_qp_23	40	D
39	0620_m17_qp_22	40	C
40	0620_s17_qp_21	40	C
41	0620_s17_qp_22	40	D
42	0620_s17_qp_23	40	B
43	0620_w17_qp_21	40	B
44	0620_w17_qp_22	40	D
45	0620_w17_qp_23	40	C
46	0620_m16_qp_22	39	B
47	0620_m16_qp_22	40	D
48	0620_p16_qp_20	40	C
49	0620_s16_qp_21	39	B

SN	Paper	Q. No.	Answer
50	0620_s16_qp_21	40	C
51	0620_s16_qp_22	39	A
52	0620_s16_qp_22	40	B
53	0620_s16_qp_23	39	B
54	0620_s16_qp_23	40	C
55	0620_w16_qp_21	39	C
56	0620_w16_qp_21	40	A
57	0620_w16_qp_22	39	A
58	0620_w16_qp_22	40	A
59	0620_w16_qp_23	39	C
60	0620_w16_qp_23	40	B