

(Finite and renewable resources)

Q1. (2018)

animal waste

food in landfill

Q2.(2019)

composite

Q3.(2019)

limestone

sand

Q4.(2019)

any **two from:**
(makes the board)

- **strong**
- **hard**
- **tough**
- **waterproof**
- **durable**
- **aesthetic reasons**
- **rigid**
- **less friction**
- **protection**

Q5.a)(2019)

(advantages of
addition polymers)
low(er) cost

low(er) density

(disadvantages of
addition polymers)
weak(er)

hard(er) to dispose of

Q5.b)(2019)

$$150 = \frac{5.25}{\text{volume}}$$

$$(\text{volume} =) \frac{5.25}{150}$$

$$(\text{volume} =) 0.035 \text{ (m}^3\text{)}$$

Q6.(2020)

tin

Q7.(2020)

any **one** from:

- ornaments
- musical instruments
- hinges / knobs / screws

Q8.a)(2020)

(A) 12 (carat)

(B) 3 (grams)

Q8.b)(2020)

any **two** from:

- (alloy of gold is) harder
- (alloy of gold is) cheaper
- aesthetic reasons

Q9.(2020)

any **one** from:

- does not corrode
- does not react with water
- is hard

Q10.(2020)

low carbon steel

Q11.(2020)

heating in a furnace

shaping wet clay

Q12.a)(2021)

limestone

sodium carbonate

Q12.b)(2021)

(advantage) stronger

(reason) less easily damaged

Q12.c)(2021)

(advantage) lower density

(reason) lighter (to install)

Q12.d)(2021)

(polymers)
last a long time

(wood)
renewable

Q12.e)(2021)

(percentage of aluminium =)

$$\frac{5.94}{6.00} \times 100$$

$$= 99 \%$$

Q12.f)(2021)

(alloy is) harder (than pure
aluminium)

Q13.a)(2021)

Using Resources

<http://www.pcfgstudy.com>

use of oil has decreased by
0.8%

or

use of oil has decreased from
1.3% to 0.5%

use of solar energy has
increased by 3.4%

or

use of solar energy has
increased from 0% to 3.4%

any **one** from:

- use of oil increased from 2007 to 2009
- no change in oil use between 2013 and 2015
- no change in solar energy use between 2007 and 2009
- use of solar energy increased most between 2013 and 2015
- between 2007 and 2011 more oil was used **and** between 2013 and 2017 more solar energy was used

Q13.b)(2021)

- carbon dioxide produced
- (which is) a greenhouse gas
- (therefore) surface temperature increases
- (therefore) global warming
- (so) climate change
- (so) polar ice caps melt
- (so) increasing sea levels
- (so) flooding
- (so) extreme weather events
- (so) reduction in biodiversity
- (so) famine / drought

- sulfur dioxide produced
- (which causes) acid rain
- (so) damage to buildings / statues
- (so) damage to trees
- (so) damage to aquatic animals
- (so) respiratory problems in humans

- carbon / soot produced
- (which are) particulates
- (which cause) global dimming
- (so) respiratory problems in humans

- carbon monoxide produced
- (which is) toxic

Q13.c)(2021)

solar is (a) renewable (source of energy)

Q13.d)(2021)

any **two** from:

- sunshine is unreliable
- increased demand for energy
- lack of space

Q14.a)(2022)

$$\begin{array}{r} \text{(mass =)} \\ 4.4 \times 5 \\ \hline 100 \end{array}$$

$$= 0.22 \text{ (kg)}$$

$$\begin{array}{l} \text{(conversion)} \\ 0.22 \text{ kg} = 220 \text{ (g)} \end{array}$$

alternative approach:

$$\begin{array}{l} \text{(conversion)} \\ 4.4 \text{ kg} = 4400 \text{ g (1)} \end{array}$$

$$\begin{array}{r} \text{(mass =)} \\ 4400 \times 5 \\ \hline 100 \end{array} \quad (1)$$

$$= 220 \text{ (g)} \quad (1)$$

Q14.b)(2022)

E10 contains more ethanol
(produced from sugar than E5)

(so) more sugar is used

(so more) carbon dioxide is
absorbed by plants (when
growing)

Q14.c)(2022)

(E10 has) less energy (in a fixed
mass)

Q15.a)(2023)

(the poly(propene) beaker will
begin to) melt

(the poly(propene) beaker will)
burn / ignite

Q15.b)(2023)

(poly(propene) beakers are) less
easily broken

Q15.c)(2023)

boron trioxide

Q16.a)(2023)

coal is a solid

(so solid) coal cannot flow
through pipelines

Q16.b)(2023)

(fuel) coal

(reason) (coal contains the)
highest percentage of sulfur

Q16.c)(2023)

any **one** from:

- acid rain
- respiratory problems (in
humans)

Q16.d)(2023)

(fuel) (natural) gas

(reason) (natural gas produces)
fewer / fewest solid particles

Q16.e)(2023)

any **one** from:

- global dimming
- health problems for humans

Q16.f)(2023)

combustion

Q17.(2023)

any **three** from:

- more oil is used than gas
- use of oil has decreased overall
- use of oil increased in some years
- there was a large drop in use of oil between 2019 and 2020
- use of natural gas decreased overall
- use of natural gas increased in some years
- use of natural gas remained fairly constant from 2014 to 2020

Q18.(2023)

carbon

Q19.(2023)

chromium

nickel

Q20.(2023)

hard

resistant to corrosion

Q21.(2024)

alloy

reinforcement

Q22.(2024)

(pre-stressed concrete) can
bear the weight of (heavy) traffic

(because pre-stressed concrete
is) stronger

Q23.(2024)

any **two** from:

(plain concrete slabs)

- are cheaper
- will be lighter (to
transport / lay)
- do not need to carry
vehicles