

(Trophic levels in an ecosystem (pyramids of biomass, biomass transfer) – Higher has calculations)

Q1.a)(2018)

x-axis: scale + labelled,
including units

bar widths correct

all 4 bars correctly labelled

Q1.b)(2018)

$$\frac{840 - 10}{840} \times 100$$

98.809523... / 98.810 / 98.81 /
98.8

99

Q1.c)(2018)

inedible parts / example

or

egested / faeces

or

respiration / as CO₂

Q1.d)(2018)

Ecology

<http://www.pcfgstudy.com>

bacteria decay organic matter /
sewage / algae / dead plants

(by) digestion

(and) bacteria respire aerobically
or
respire using oxygen

(which) lowers oxygen
concentration (in water)
or
fish have less oxygen

(so) reduced energy supply
causes death of fish

Q2.(2020)

triangular pyramid with 3 levels

correct labels: (waste)
vegetables / plants; insect(s);
dog(s)

Q3.(2020)

any **two** from:

- carbon dioxide from
respiration (from dog)
- urea from excretion (from
dog)
- not all parts (of insects) are
absorbed / digested (by dog)

Q4.a)(2022)

substitution

$$\frac{21\,800}{1\,700\,000} \times 100$$

1.282(3529)

comparative efficiency

$$\frac{4.098}{1.282}$$

3.196.....

significant figures

3.20

Q4.b)(2022)

less energy lost as heat

less energy lost in movement

Q4.c)(2022)

any **two** from:

- increased spread of disease
- or**
 - increased use of drugs
 - / antibiotics (to
 - reduce disease)
- more antibiotics in meat / milk
- (extra) cost of heating /
- lighting / food / drugs
- aggressive behaviour
- (causing harm)
- or**
 - 'emotional' stress reduces
 - productivity