

(Health and disease (non-communicable diseases, risk factors, cancer))

Q1.a)(2018)

$$0.98 \times 10\,800$$

10 584

Q1.b)(2018)

take stem cells from patient
(bone marrow / skin)

remove / change / fix the faulty /
CF gene

create embryo using these stem
cells

remove stem cells (from
embryo) and stimulate / allow
them to divide / differentiate into
lung (cells)

Q1.c)(2018)

idea of ethical / religious
concerns about use of embryos
such as loss of (potential)
human life

Q2.a)(2019)

(cancer) cells cannot divide
or
(cancer) cells are destroyed /
killed

(so) tumour doesn't grow / get
bigger **or** tumour less likely to
spread **or** tumour less likely to
form secondary tumours

(because) enzymes **A** and **B** are
not working / active / effective /
present
or
(because) enzymes **A** and **B** are
inhibited

Q2.b)(2019)

(functional) enzyme **B** would still be made / present

(therefore cancer) cells would still divide uncontrollably

or

(therefore cancer) cells would not be destroyed

or

(therefore) the tumour will (continue to) grow / get bigger / spread **or** the tumour will form secondary tumours

Q2.c)(2019)

any **two** from:

- to avoid the patients thinking they feel better with the drug
- or**
- to take into account a psychological effect
- as a control / comparison
- to avoid bias(ed results)

Q2.d)(2019)

testing on volunteers with the disease

Q2.e)(2019)

monoclonal antibody is attached to radioactive substance / toxin / drug / chemical

monoclonal antibody will (only) attach to / target (antigen on) cancer cells / tumour

(so) radioactive substance / toxin / drug / chemical will (bind to cancer cells and) stop them growing / dividing

Q3.a)(2020)

any **two** from:

- BMI / morphology / obesity level
- smoking habits
- diet
- medication
- family history of liver disease
- fitness levels
- ethnicity
- area of UK they live in

Q3.b)(2020)

$$2.55 - 1.60 (= 0.95)$$

$$\left(\frac{0.95}{2.55} \times 100 = \right)$$

$$37 (.2549019608...) (\%)$$

Q3.c)(2020)

$$12 \times 2 \times 7 = 168 \text{ (g/week)}$$

$$1.8$$

Q3.d)(2020)

any **two** from:

- consuming alcohol increases the RR (with / without meals) **and** supporting data
- consuming less than 50 g/week of alcohol with meals does not increase the RR
- even (small amounts of alcohol at) 25 g/week increases the RR if not with meals

Q3.e)(2020)

any **two** from:

- large number in survey
- long term / 15 year survey

- well controlled

Q3.f)(2020)

any **one** from:

- people underestimate / overestimate alcohol consumption
- people may change (lifestyle / drinking) habits over time
- some people may drink all their weekly alcohol at once

Q3.g)(2020)

Responses may refer to either total or partial liver failure

- no bile made (in the liver)
 - fats / lipids are not emulsified
 - surface area of fats / lipids not increased
 - pH of small intestine will not be alkaline / neutralised
 - enzymes (in small intestine) will not work effectively
 - **or** (named) food not digested / absorbed
 - so may lose weight
- lactic acid not broken down / oxidised
 - accumulation of lactic acid in blood / body
 - lactic acid is toxic **or** body will be poisoned
 - oxygen debt higher / prolonged
 - so muscle pain / fatigue
- proteins / amino acids will not be broken down (in liver)
 - (amino acids) not deaminated
 - amino acids not made into urea **or** will not form ammonia
 - (however) any ammonia formed is toxic
 - so accumulation of amino acids in blood / body
- liver does not break down / remove other toxins (like alcohol)
 - toxins accumulate in blood / body
 - body will be poisoned
 - so pain **or** jaundice **or** swollen liver **or** portal hypertension occurs
- glycogen stores will not be formed
 - cannot control blood glucose
 - so hyperglycaemia / hypoglycaemia / diabetes / coma may occur

Q4.a)(2021)

normal

Organisation

<http://www.pcfgstudy.com>

Q4.b)(2021)

$$92 \div 1.71^2$$

31.46(...)

31.5

Q4.c)(2021)

any **two** from:

- the higher the BMI (category)
the lower the number of years
living in good health
- the higher the BMI (category)
the higher the number of
years living in bad health
- the higher the BMI (category),
the lower total life expectancy

Q5.(2021)

costs the NHS / UK health
service / Government / hospitals
more money

(because need to pay for)
additional surgery / medication /
hospital stay to treat stroke /
diabetes

or

more time off work (if in hospital
/ unwell) (1)

(so) employer / Government
have to give financial support (1)

Q6.(2021)

allow any **one** from:

- movement issues

- loss of job / income
- disability
- mental health impact of lack of movement
- or**
- mental health impact of pain
- need to visit the doctor / take medication regularly
- may need surgery

Q7.(2021)

type 2 diabetes

CVD / CHD

or

heart attack / disease

or

stroke

Q8.a)(2021)

cells grow / divide abnormally / uncontrollably

Q8.b)(2021)

has spread to other parts / organs of the body

or

has spread to the liver / lung

or

has formed a secondary tumour

Q8.c)(2021)

Tiredness

- fewer red blood cells
- so less haemoglobin
- so less oxygen transported around the body
- so less (aerobic) respiration can take place
- so more anaerobic respiration takes place
- less energy released for metabolic processes
or less energy released so organs cannot function as well
- lactic acid produced (during anaerobic respiration) causes muscle fatigue

Frequent infections

- fewer white blood cells / phagocytes / lymphocytes
- so fewer antibodies produced or less phagocytosis
- so fewer pathogens / bacteria / viruses killed

Bleeding

- fewer platelets
- so blood does not clot as easily

For **Level 3**, reference to all three symptoms must be made.

Q9.(2023)

having disorder **S** reduces
incidence / percentage of
malaria

as age increases a lower
percentage of children with
disorder **S** get malaria until age
10, then the percentage
increases

Q10.(2024)

arteries

Q11.a)(2024)

any **two** from:

- smoking increases the (%)
risk of **all** types of
(cardiovascular) disease
- smoking increases the (%)
risk of having (disease) **H**
more than any other type of
(cardiovascular) disease
- smoking increases the (%)
risk of having (disease) **E** less
than any other type of
(cardiovascular) disease

Q11.b)(2024)

Organisation

<http://www.pcfgstudy.com>

y-axis labelled 'Percentage / %
increase in risk (compared to
people who have never
smoked)'

correct scale of 1 cm = 5% on
y-axis

all bars plotted correctly

all bars correctly labelled

Q11.c)(2024)

any **one** from:

- poor diet
- lack of exercise