

BIOLOGY REVISION ANSWER BOOKLET

BIOLOGY REVISION 1 ANSWERS

(a) receptors detect / sense stimuli / change in surroundings or convert stimulus into an impulse
ignore send impulses to brain / spinal cord 1

example of a receptor allow any appropriate organ or part of an organ, eg eye / retina or named
type of receptor eg light receptor 1

effectors allow / make response or convert an impulse to an action ignore receive impulses from
brain / spinal cord 1

(effector) muscle / gland allow an example ignore eg arm / leg 1

(b) (i) junction allow idea of a (small) gap / space do not allow if implication is that the neurones
move 1

between neuron(e)s allow named types of neurones 1

(ii) chemical allow answers in terms of specific types of neurone allow neurotransmitter / named
neurotransmitter released 1

any one from: • (chemical released) from one neurone ignore produced • (chemical) passes
(across synapse) to next neurone to stimulate / cause (electrical) impulse allow diffuses for passes
(across) 1

(c) (i) skin ignore hand / LEG 1

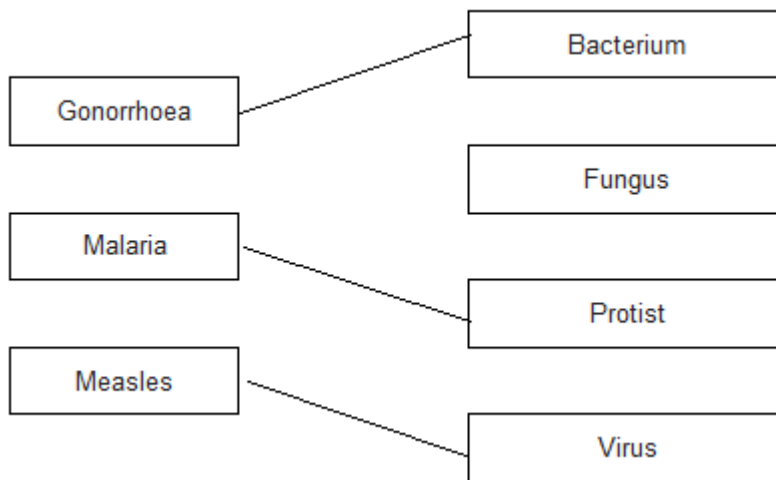
(ii) 1.6 (cm per millisecond) allow 2 if evidence of rounding up of 1.6 1

(iii) any two from: ignore length of neurones • synapses slow down transmission / impulse
allow idea of movement of chemical being slower than electrical impulse • fewer synapses (via
brain) allow one synapse compared to two or only one synapse • (therefore) fewer delays allow
impulse travels more slowly in relay neurones 2

[TOTAL 12]

BIOLOGY REVISION 2 ANSWERS

1. (a)



3

(b) (trachea) has mucus

1

to trap pathogens

1

(trachea) has cilia

1

to move mucus out of trachea

1

(c) dependent variable:

number of times mosquitoes landed on socks

1

control variable:

any one from:

- number of mosquitoes in each container
- length of time socks worn
- dampness of socks
- same type of socks
- size of container
- time
- temperature

- species of mosquito
- age of mosquito

1

(d) use worn socks

or

use chemical from worn socks

1

to attract / trap infected mosquitoes

1

or accept:

***wear clean socks / change socks regularly (1)
to reduce the chance of attracting mosquitoes
(1)***

BIOLOGY REVISION 3 ANSWERS

Use of enzymes

- (a) (i) directly proportional
gains full marks
- or**
0.1 rise in rate for 1% rise in concentration
accept increased concentration: increased rate or positive correlation or proportional for 1 mark
- 2
- (ii) 0.6
allow ± 0.01
- 1
- (b) (0.5% trypsin) cheaper
ignore more profit
- 1
- (35°C) faster reaction
allow (35°C) optimum / best temperature
- 1
- so takes less time to make product
- 1
- extra heating cost outweighed by savings on enzyme cost
- 1
- (c) (i) any **two** from:
- breaks down / digests food
allow pre-digests protein / food
allow easier for baby to digest
 - from protein into amino acids / peptides
 - makes soft(er) / runni(er)
allow description of texture change
allow make (more) soluble
- 2
- (ii) correct named enzyme (1) correct function (1)
to gain 2 marks function must relate to correctly named enzyme
- Eg. carbohydrase or lipase in washing powders
- Or carbohydrase
accept amylase / maltase / lactase
- 1

starch → sugar **or** lactose → glucose **or** making sugar syrup

or

isomerase

glucose → fructose **or** making slimming foods

or

lipase

fats / oils → fatty acids **or** removal of grease stains
accept other correct example

[11]

BIOLOGY REVISION 4 ANSWERS

M1. man XY

allow (chromosomes) different

1

woman XX

*allow (chromosomes) same
genes and alleles are neutral
allow 1 mark for one is XX and one is XY*

1

[2]

M2. (a) *idea*

identical (do not allow simply "the same number")
for 1 mark

1

(b) *idea*

chromosomes double/duplicate/copies made
for 1 mark

separate into 2 sets/divide*
gains 1 mark

but
separate into 4 sets/divide twice*
gains 2 marks

number halved compared to bodycell
or
single set (only) 16
accept in terms of cells but only if chromosomes referred to in
first and/or last items)
for 1 mark

4

[5]

- M3.** (a) sexual / sex
for 1 mark 1
- (b) *idea that*
sexual reproduction brings about a mixture of genes
or similar / different genes / parents / gametes / DNA /
characteristics / chromosomes (*not* features)
for 1 mark 1
- (c) (i) asexual / cloning (*allow* vegetative)
for 1 mark 1
- (ii) (A) *idea that* (they are exactly the same). *Do not allow*
similar or just one named feature.
for 1 mark 2
- (b) different (*allow* similar but *do not allow* same).
Allow any one named difference
for 1 mark
- (d) (i) greater the X-ray dose, greater the % of mutations
or % of mutations increases steadily / in proportion to X-ray dose
for 1 mark 1
- (ii) ionising radiations / ultra-violet light / alpha particles / beta particles
/ gamma rays / radio activity / chemicals / drugs / smoking / natural
in meiosis / spontaneous / cell replication / toxic waste / pollution
1
- Accept* radioactivity but not radiations alone.
for 1 mark

[7]

FURTHER PRACTICE EXAM QUESTIONS MARK SCHEME

MARK SCHEME Disease

11 mark for each correct line

mark each line from left hand box

two lines from left hand box cancels mark for that box

3

(b) any **three** from:

Students have been informed that the headline is not justified

- reference to reliability, eg only a small number of mice tested
or trial too short
or investigation not repeated
- reference to control, eg mice given caffeine not coffee
or 6 cups (equivalence) is more than 1 dose
- (and) the effect on mice might not be same as on humans
allow only tested on mic
- (also) text suggests that the treatment improves memory loss (rather than delays it)
accept text suggests disease cured

or mice already have memory loss or experiment only showed improvement in memory

or does not show **delays** Alzheimer's

or experiment not done on old mice

allow reference to the fact that mice engineered to have it

3

[6]

2. (a) any **two** from:

- arthritis
allow damaged joints
- diabetes
accept high blood sugar

- high blood pressure
- strokes
allow blocked blood vessels / thrombosis
- allow breathing difficulties
ignore cancer
ignore high cholesterol

2

(b) (i) any **two** from:

to gain marks there must be a comparison
ignore comparison at single age

- lower number of women deaths up to age of 75-80
- higher number of women deaths after 80
*ignore women die older **or** men die younger*
- men's peak higher
- men's peak at an earlier age
- men's death start earlier than women
- more men than women die of heart disease

2

(ii) any **two** from:

- men smoke more (cigarettes)
ignore alcohol
- more men smoke
- men under more stress
- men less active
- more men overweight / eat more / less diet conscious **or**
different fat distribution
ignore reference to body size
- genetic factors
- men might have lower metabolic rate
ignore references to hormones
- men less likely to visit doctor even though they have symptoms

2

(c) *points can be in any order*

laboratory tests / tests on tissues
or
tests on animals
or
tests for toxicity
ignore computer simulations

1

tests for side effects on volunteers / healthy people / small numbers

1

widespread testing
or
testing for optimum dose
or
test on patients / sick people
or
test to see if it is effective
accept use of placebo

1

[9]

Mark scheme Infection and response

MARK SCHEME

1

. (a) antibodies

allow antitoxins / memory cells
*do **not** allow antigens*

1

immune

ignore protection
allow resistant

1

(b) (i) fell

1

numerical qualification to zero / nothing / by 100%
allow stopped in 1995

1

(ii) (no)

ignore circle

1

% vaccination fell **or** when no vaccination

but autism numbers did not fall / stayed high / increased

or

'(yes) might support it if time lag between vaccination and autism symptoms' / 'time lag for diagnosis' (1)

6 year time lag quantified (1)

1

[6]

2(a) any **two** from:

- only one 'chromosome'
allow one strand of DNA
- circular
allow loop
- may have plasmids
- not in a nucleus / no nucleus

2

(b) (i) any **one** from:

- London is much higher
or converse
- more variable / wider range
allow 'on average it is 5 / 6 times greater'

1

(ii) increases

Included figures must be correct

1

(iii) overall slight increase

accept 'doesn't change much'

1

variable / goes up and down

1

(c) (i) both axes correctly labelled

x = Year

y = Number of cases

1

correct points

all correct = 2 marks

1-2 errors = 1 mark

> 2 errors = 0 marks

2

- suitable line of best fit
accept straight line or smooth curve 1
- (ii) doesn't fit the pattern / line of best fit 1
- (d) provides immunity / protection (to TB)
ignore 'stops people catching it'
ignore 'resistance' 1
- prevents TB spreading
accept ref to herd immunity 1
- [13]

NERVOUS SYSTEM

1 (a) *ignore nerve / neuron(e) throughout*

A sensory

accept afferent

1

B motor

accept efferent

1

C relay

accept intermediate

1

(b) stretch

allow pressure / pull / tension (in muscle)

allow a hit at (point) P

ignore pain

1

(c) any three from:

- chemical (release)
accept neurotransmitter / acetylcholine
- diffuses (across the gap / synapse)
- transmits impulse / information (across synapse)
allow transmits signal / message
- between neurones / nerve cells / named

*if named, must be either sensory / A to relay / C
or relay / C to motor / B
allow 'to the next neurone'*

3

[7]

2.(a) motor

*allow efferent / postsynaptic
allow another relay (neurone)*

1

(b) release of chemical (from relay neurone)

*allow ecf for 'motor' neurone from (a)
allow release of neurotransmitter / named
example*

1

chemical crosses gap / junction / synapse

*allow diffuses across
allow chemical moves to X*

1

chemical attaches to X / motor / next neurone (causing impulse)

1

(c) (curare) decrease / no contraction

accept (muscle) relaxes

1

(strychnine) increase / more contraction

*if no other mark awarded allow 1 mark for
(curare) decrease / no response and
(strychnine) increase / more response*

1

[6]

3.(a) (i) synapse

1

(ii) chemical

*accept neurotransmitter or named
neurotransmitter*

1

(b) 3.175 or 3.18 (seconds)

*allow 2 marks for a time of 3.2 calculated for the
pain impulse*

or

*allow 1 mark for a correct substitution or
reorganisation:*

$$0.6 = 1.92 / t$$

or

$$t = 1.92 / 0.6$$

**allow 1 mark for an incorrect time for pain
impulse – 0.025 correctly subtracted**

3

[5]