

M1. (a) B

1

less / no insulin (produced) **or** insulin produced in pancreas
allow pancreas can't monitor (blood) sugar (level)
ignore pancreas can't control (blood) sugar (level)
allow increased glucagon production
allow A as liver stores less glucose / sugar for 2 marks only

1

(b) (i) (it / protein / insulin) digested / broken down
if ref to specific enzyme must be correct (protease / pepsin)
ignore denatured
*do **not** accept digested in mouth / other incorrect organs*

1

(ii) any **two** from:
ignore injections

- (attention to) diet
*accept examples, eg eat less sugar(y food) **or** eat small regular meals*
allow eat less carbohydrate / control diet
ignore cholesterol or balanced / healthy diet
- exercise
ignore keep fit / healthy
- (pancreas) transplant / stem cells / genetic engineering

2

[5]

M2. (a) person with muscle disease:

allow reverse argument for healthy person

any **three** from:

NB all points are comparative except peak (point 3)

*allow use of **two** approximate figures as a comparison*

- higher resting rate **or** higher at start
- when exercise starts / then increases more / more rapidly
accept description eg rise fall
- peaks (then falls)
- levels off later than healthy person
- higher rate during exercise
if no other marks awarded allow 1 mark for 'it's higher'
- greater range

3

(b) (i) oxygen

accept adrenaline

accept O₂

*do **not** accept O, O₂ or O²*

1

(ii) cannot release sugar / glucose (from glycogen)

or

cannot store glucose / sugar (as glycogen)

1

need to receive glucose / sugar (from elsewhere)

ignore oxygen

1

for energy / respiration / cannot store energy

ignore aerobic / anaerobic

1

[7]

- M3.** (a) (i) chemical 1
- (ii) pituitary gland 1
- (b) 8
allow 9 or 10 1
- (c) (i) any **four** from:
 - progesterone starts being produced at 4 weeks / no progesterone before 4 weeks
 - and then / from 4 weeks increases
 - oestrogen at constant / low level (from 0) to 20 weeks
 - and then / from 20 weeks increases
 - from 20 – 36 weeks level of O rises more steeply than that of P**or**
 - P is always higher than O from 6 to 36 weeks*if no other marks awarded, allow progesterone and oestrogen both increase / rise for 1 mark.* 4
- (ii) oxytocin 1
- level of oxytocin increases just before birth 1

[9]

M4. (a) (i) rate of chemical reactions (in the body) 1

(ii) any **two** from:

- heredity / inheritance / genetics
- proportion of muscle to fat **or** (body) mass
allow (body) weight / BMI
- age / growth rate
- gender
accept hormone balance or environmental temperature
ignore exercise / activity

2

(b) (i) 77

correct answer with or without working gains 2 marks
*allow 1 mark for 70 / 56 **or** 1.25 **or** 5*

2

(ii) increase exercise

accept a way of increasing exercise

1

reduce food intake

accept examples such as eat less fat / sugar

*allow go on a diet **or** take in fewer calories*

ignore lose weight

ignore medical treatments such as gastric band / liposuction

1

[7]

M5. (a) (i) any **one** from:

- chemical messenger / message
allow substance / material which is a messenger
- chemical / substance produced by a gland
allow material produced by a gland
- chemical / substance transported to / acting on a target organ
- chemical / substance that controls body functions

1

(ii) gland / named endocrine gland

brain alone is insufficient
allow phonetic spelling

1

(iii) in blood / plasma **or** circulatory system **or** bloodstream

accept blood vessels / named
*do **not** accept blood cells / named*

1

(b) *each hormone must be linked to correct action apply list principle ignore the gland producing hormone*

FSH stimulates oestrogen (production) / egg maturation / egg ripening
ignore production / development of egg

1

oestrogen inhibits FSH

allow oestrogen stimulates LH / build up of uterine lining

1

LH stimulates egg / ovum release / ovulation

accept LH inhibits oestrogen
accept LH controls / stimulates
growth of corpus luteum
ignore production of egg

1

- M6.** (a) (i) **A** – pituitary
allow hypothalamus 1
- B** – ovary / ovaries 1
- (ii) in blood (stream)
accept in plasma
ignore dissolved 1
- (b) (i) FSH and Luteinising Hormone (LH) 1
- (ii) fertilised
OR
reference to sperm 1
- form embryos / ball of cells or cell division 1
- (embryo) inserted into mother's womb / uterus
allow (fertilised egg) is inserted into mother's womb / uterus 1
- (iii) any **one** from:
- multiple births lead to low birth weight
 - multiple births cause possible harm to mother / fetus / embryo /

baby / miscarriages
allow premature
ignore reference to cost / ethics / population

1

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

- almost identical
allow S (slightly) more successful
- both approximately 20%

1

(ii) larger numbers (in clinic R) (in 2007)
allow only 98 (in S) (compared to 1004 (in R))

1

results likely to be more repeatable (in 2008)
allow more reliable
do **not** accept more reproducible / accurate / precise

1

[11]

- M7.** (a) (i) 3.0
accept 3 1
- (ii) any **two** from:
 - take in water
 - take in ions / minerals / nutrients
accept salts / named ions
 - ignore food*
 - anchorage / support
2
- (iii) asexual reproduction 1
- (b) (i) a tropism 1
- (ii) if tip exposed / **A** – grows / bends towards light
*allow tip of **A** moves towards light*
*ignore **A** responds to light*
allow remained 'straight' 1
- if tip covered / **B** – did not grow towards light / remained vertical
*ignore **B** does not respond to light*
ignore phototropism
only A grows towards the light = 2 marks 1
- (c) (i) auxin 1
- (ii) hormone comes from the tip 1

more on shady side / moves away from light
allow reference to right-hand side

1

stimulates growth

1

more growth on shady side (than on light side)
answer must be comparative
ignore phototropism
ignore cell division

1

[12]