

# GCSE BIOLOGY

Topic Paper: 5 Homeostasis and response  
Part 1 & 2 Mark Scheme

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## MARK SCHEME



**65 Marks**



- M1.** (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]
- M2.** (a) pituitary (gland / body) 1
- (b) oestrogen inhibits the release of FSH  
*ignore references to LH* 1
- FSH stimulates follicle development / causes egg to develop  
**or** no follicle / egg development if high oestrogen  
*accept growth / maturing / ripening for development* 1
- no ovulation / no egg release  
*do **not** accept no egg to be fertilised* 1
- [4]



**M3.** argued evaluation

large scale trial gave better results

chose uneducated women so that if these women could use it correctly, women elsewhere would be able to

uneducated women unlikely to give informed consent

no placebo

used pill with high dose of hormone / should have tried a range of doses / results not valid for other populations

women not told pill was experimental / pill might have side effects / should have done pre-trial to check for side effects

[6]

**M4.** (a) inhibits FSH (production / secretion)

1

(therefore) no eggs mature / released

*if no other marks gained allow 1 mark for no eggs produced*

1

**or**

effect of FSH on ovary described

*references to LH are neutral*



(b)

*maximum 4 marks if no conclusion*

Pros max 2marks from 4 marks e.g.

large scale trial gave better results

chose uneducated women so that if these women could use it correctly,  
women elsewhere would be able to cons max 3 marks from 4 marks e.g.

used pill with high dose of hormone – **either** so results not valid for general  
use of hormone **or** dangerous

side effects ignored

women not told pill was experimental / pill might have side effects

no placebo

should have tried a range of doses

should have done pre-trial to check for side effects

4

conclusion 1 mark e.g.

trials flawed therefore cons outweigh pros

accept reverse e.g. trials flawed but pros outweigh cons

1

[7]

**M5.**

(i) pituitary

1

(ii) ovary

1

[2]

**M6.**

(a) FSH / follicle stimulating (hormone)

1

LH / luteinising (hormone)

*either order*

1



(b) any **three** from:

*max 2 if only advantages or only disadvantages discussed allow reverse arguments*

advantages of InvoCell eg

low(er) cost

quick(er)

laboratory / incubator / equipment not needed

more convenient

*ignore can be done in doctors surgery*

3

disadvantages of InvoCell eg

low(er) success rate

embryo development cannot be monitored

can not be used where male is infertile

only tested on 800 women

(risk of) infection / pain in vagina

*ignore sedation*

argued conclusion

*must include reference to **both** advantages and disadvantages and must be at end of answer*

1

[6]

**M7.** (a) **A** sensory (neurone)

*ignore nerve*

1

**B** motor (neurone)

*ignore nerve*

1

**C** spinal cord / central nervous system / white matter

*accept grey matter*

1

(b) by chemical / substance

*allow transmitter*

1



(c) muscle

*allow extensor  
ignore muscle names*

1

[5]

M8. (a) auxin

*accept other named plant hormones*

1

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

no (fusion of) gametes / fertilisation  
*allow no meiosis **or** new cells only produced by mitosis*

only one parent  
*allow not two parents*

no mixing of genetic material

no genetic variation **or** genetically identical offspring  
*allow clones*

3

(ii) more / many offspring / plants (produced from one parent plant)

*allow less damage to parent plant  
ignore speed / cost*

1

[5]

M9. (a) chance of getting pregnant decreases with age

*ignore figures*

1

chance of infertility increases with age

1

(b) (i) causes eggs to mature

*allow growth  
do **not** accept produced  
do **not** accept releases egg  
ignore references to oestrogen / LH / uterus / womb*

1

(ii) causes egg release

*do **not** accept matures egg / growth of egg / produces egg  
ignore references to other hormones and uterus / womb*

1

(c) embryo

*allow (fertilised) egg divides*

1



insert (embryo) into womb / uterus  
*ignore electric shock*

1

[6]

**M10.** (a) A cytoplasm  
*in this order only*

1

**B** (cell) membrane  
*do **not** accept (cell) wall*

1

(b) (i) synapse

1

(ii) (as) chemical  
*accept neurotransmitter or named*  
*ignore references to how the chemical is passed*  
*do **not** accept electrical*

1

(c) (from light-sensitive cell to connecting neurone) to sensory neurone  
*ignore references to synapses accept 'nerve cell' for neuron(e)*  
*throughout penalise 'nerve' for neurone once only*

1

(sensory neurone) to brain / CNS  
*allow (sensory neurone) to relay neurone / spinal cord*

1

(brain / CNS) to motor neurone  
*allow (relay neurone / spinal cord) to motor neurone*

1

(motor neurone) to (eyelid) muscle  
*ignore effector*

1

[8]



**M11.** any **three** from:

- max 2 if only advantages **or** only disadvantages discussed*
- ignore 'side effects' unqualified*
- ignore side effects produced by hormones*

**advantages of IUCD over pill eg**

- can't forget to take it / have to take pill every day  
*do **not** allow last 5 years unless qualified*
- effect much longer than pill
- more effective in preventing pregnancy  
*do **not** allow reference to figures unless qualified*
- stops sperm entering uterus

**disadvantages of IUCD over pill eg**

- pain / uncomfortable / risk of infection / may damage uterus
- prevents fertilised egg developing / 'embryo rights'  
*allow kills embryo*
- needs replacement by doctor / nurse / professional  
**or** access to IUCD is more difficult than pill  
**or** IUCD is harder to come off than pill

3

argued conclusion

- must include a preference and a reference to **both** advantages and disadvantages*
- or** one is better in a given situation but the other is better in a different situation*

1

[4]

**M12.** (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

[6]