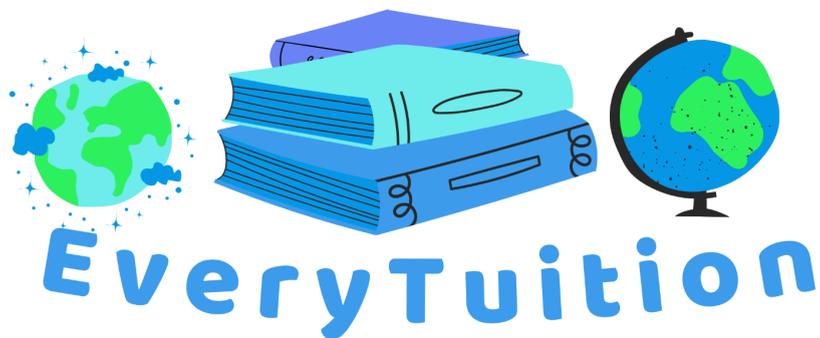


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# **Biology Topic 5 AQA Exam Questions: Homeostasis and Response**

**Exam Questions/Mock Exam Questions**



**Questions For Foundation, Higher, and Triple Science [\(scroll down for questions for higher and triple science only\)](#):**

(It would still be recommended to answer the foundation tier questions for triple science and higher tier to ensure you have good understanding).

**Q1.** The human body maintains a constant internal environment.

(a) What is the term for this process?

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(1)

(b) Give one reason why it is important to maintain body temperature.

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(2)

**[3 marks]**

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**Q2.** Body temperature is regulated by the thermoregulatory centre in the brain.

(a) Describe how the body responds when it becomes too hot.

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(2)

(b) Describe how the body responds when it becomes too cold.

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(2)

**[4 marks]**

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**Q3.** The nervous system allows us to react to our surroundings.

(a) Name the three main parts of a coordination response.

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(3)

**[3 marks]**

**Q4.** Reflex actions are automatic and rapid.

(a) Describe one example of a reflex action.

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(1)

(b) Why are reflex actions important?

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(1)

**[ 2 marks]**

**Q5.** Hormones are chemical messengers.

(a) Where are hormones produced?

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(1)

(b) Name one organ that is affected by adrenaline.

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(1)

**[2 marks]**

**Q6.** The endocrine system controls many body functions.

(a) State one difference between the nervous system and the endocrine system.

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(2)

**[2 marks]**

**Q7.** Blood glucose concentration is controlled by the pancreas.

(a) Name the hormone that lowers blood glucose levels.

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(1)

(b) How does this hormone work?

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(2)

**[3 marks]**

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**Q8.** Diabetes affects the control of blood glucose.

(a) What is the difference between Type 1 and Type 2 diabetes?

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(2)

**[2 marks]**

**Q9.** Hormones control the menstrual cycle.

(a) Name the hormone that stimulates the release of an egg.

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(1)

(b) Name the gland that produces FSH.

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(1)

**[2 marks]**

**Q10.** Contraceptives help prevent pregnancy.

(a) State one type of hormonal contraceptive.

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(1)

(b) Suggest one non-hormonal method of contraception.

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(1)

**[ 2 marks]**

**Q11.** Fertility treatment involves hormones.

(a) Name one hormone used in fertility treatment.

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(1)

(b) Suggest one ethical concern of fertility treatment.

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(1)

**[2 marks]**

**Q12.** The structure of a nerve cell helps its function.

(a) Describe how the shape of a nerve cell is adapted for its function.

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(2)

**[2 marks]**

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**Q13.** Control systems in the body use receptors and effectors.

(a) What is the function of a receptor?

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(1)

(b) Give one example of an effector in the human body.

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(1)

**[2 marks]**

**Q14.** The eye adjusts to light and dark conditions.

(a) What part of the eye controls the amount of light entering?

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(1)

(b) Describe how the eye reacts to bright light.

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(2)

**[ 3 marks]**

**Q15.** Scientists test hormone levels in the blood.

(a) Suggest one reason for measuring hormone levels.

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(1)

(b) Describe how hormone levels can be tested.

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(2)

**[ 3 marks]**

**Q16.** The brain controls complex behaviours.

(a) Name the part of the brain responsible for memory.

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(1)

(b) How can scientists study the brain?

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(2)

**[3 marks]**

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**Q17.** The kidneys maintain water balance.

(a) What is the name of the hormone that controls water levels?

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(1)

(b) Explain what happens when the body is dehydrated.

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(2)

**[3 marks]**

**Q18.** Plant roots respond to gravity. (a) What is the name of this response?

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(1)

(b) Name the plant hormone involved.

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(1)

**[2 marks]**

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**Q19.** Auxins control plant growth.

(a) Describe one effect of auxins on plant shoots.

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(2)

(b) Suggest one commercial use of auxins.

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(1)

**[3 marks]**

**Q20.** Hormones can be used to delay or trigger processes in the body. (a) Give one example of a medical use of hormones.

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(1)

(b) Explain why hormones are only needed in small quantities.

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(2)

**[3 marks]**

### **Higher Tier**

**Q21.** The nervous system transmits signals rapidly.

(a) Describe how information is passed across a synapse.

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(2)

(b) Why is the transmission of impulses across synapses slower than in neurones?

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(2)

**[4 marks]**

**Q22.** Hormonal and nervous responses differ in speed and duration.

(a) Compare the speed and duration of hormonal and nervous responses.

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(2)

(b) Give one reason why hormonal responses are useful for long-term changes.

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(1)

**[3 marks]**

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**Q23.** FSH and LH are hormones involved in fertility.

(a) Describe the roles of FSH and LH in the menstrual cycle.

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(3)

**[ 3 marks]**

**Q24.** IVF treatment uses hormone therapy.

(a) Explain how hormones are used during IVF.

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(3)

(b) Suggest one ethical issue linked to IVF.

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(1)

**[4 marks]**

**Q25.** Diabetes is a condition related to blood glucose regulation.

(a) Explain the differences in treatment between type 1 and type 2 diabetes.

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(3)  
**[ 3 marks]**

**Q26.** The body regulates blood glucose concentration.

(a) Explain the role of glucagon when blood glucose levels fall.

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(3)  
**[3 marks]**

**Q27.** Kidney failure can be treated using dialysis or transplantation.

(a) Describe how dialysis works.

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(3)

(b) State one advantage and one disadvantage of kidney transplants.

Advantage: \_\_\_\_\_

Disadvantage: \_\_\_\_\_

(2)

**[5 marks]**

**Q28.** The brain has several important regions.

(a) Describe the function of the cerebral cortex.

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(2)

(b) Explain one risk of studying the brain using electrical stimulation.

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(1)

**[3 marks]**

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**Q29.** The iris controls the amount of light entering the eye.

(a) Explain how the iris responds to dim light.

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(2)

(b) Why is this response important?

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(1)

**[3 marks]**

**Q30.** Homeostasis includes control of water balance.

(a) Explain how ADH affects the kidney tubules.

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(2)

(b) What would happen to urine output if ADH production stopped?

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(1)

**[ 3 marks]**

**Q31.** Plant growth can be affected by light and gravity.

(a) Describe how auxin is distributed in a plant shoot exposed to light from one side.

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(2)

(b) Explain the effect this has on the direction of growth.

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(2)

**[4 marks]**

**Q32.** Negative feedback maintains stable internal conditions.

(a) Define negative feedback.

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(2)

(b) Give one example of negative feedback in the body.

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(1)

**[3 marks]**

**Q33.** Blood glucose regulation is an example of homeostasis.

(a) Describe what happens when blood glucose levels rise after eating.

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(3)

**[3 marks]**

**Q34.** Hormones play a key role in the menstrual cycle.

(a) Explain how progesterone prevents the release of an egg.

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(2)

(b) What would happen if progesterone levels remain high throughout the cycle?

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(1)

**[3 marks]**

**Q35.** Thermoregulation is controlled by the hypothalamus.

(a) Explain how sweating helps reduce body temperature.

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(2)

(b) Suggest one disadvantage of excessive sweating.

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(1)

**[3 marks]**

**Q36.** Receptors and effectors are involved in control systems.

(a) Define the term 'effector' and give one example.

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(2)

**[2 marks]**

**Q37.** Scientists use MRI scans to study brain structure.

(a) Suggest one advantage and one limitation of using MRI to study the brain.

Advantage: \_\_\_\_\_

Limitation: \_\_\_\_\_

(2)

**[2 marks]**

**Q38.** Body temperature regulation is an example of negative feedback.

(a) Describe what happens when body temperature falls below normal.

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(3)

**[3 marks]**

**Q39.** Contraceptive pills contain hormones.

(a) Explain how contraceptive pills prevent pregnancy.

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(3)

**[3 marks]**

**Q40.** Plants show phototropism and gravitropism.

(a) Compare phototropism and gravitropism in shoots and roots.

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(3)

**[3 marks]**

**Q41.** Kidney dialysis can be life-saving.

(a) Explain why dialysis fluid must contain the same concentration of useful substances as blood.

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(2)

**[2 marks]**

**Q42.** Blood glucose must be kept within narrow limits.

(a) Suggest what might happen if blood glucose remains high for a long time.

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(2)

**[2 marks]**

**Q43.** Auxins are plant hormones used commercially.

(a) Describe how auxins are used in agriculture.

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(2)

**[2 marks]**

**Q44.** Thermoregulation helps keep enzymes working efficiently.

(a) Explain why enzymes stop working properly if body temperature is too high.

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(2)

**[2 marks]**

**Q45.** The pancreas has an important role in homeostasis.

(a) Explain how insulin and glucagon work together to regulate blood sugar levels.

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(3)

**[3 marks]**

## **Triple Science Tier**

**Q46.** Scientists are studying the use of synthetic ADH for patients with kidney problems.

(a) Explain how ADH affects the concentration of urine produced by the kidneys.

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(3)

(b) Why might synthetic ADH be useful for people with diabetes insipidus?

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(2)  
[ 5 marks]

**Q47.** Researchers tested the effect of a new contraceptive hormone on ovulation.

(a) Describe the role of LH in the menstrual cycle.

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(2)

(b) Explain how contraceptive hormones can prevent pregnancy.

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(3)  
[ 5 marks]

**Q48.** A scientist is studying tropisms in genetically modified plants.

(a) What is meant by a positive phototropism?

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(2)

(b) Describe how auxin distribution causes phototropism in plant shoots.

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(3)  
[ 5 marks]

**Q49.** A student reads about the use of thyroxine in metabolic disorders.

(a) Name the gland that produces thyroxine.

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(1)

(b) Describe one effect of thyroxine on the body.

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(2)

**[3 marks]**

**Q50.** Doctors monitor levels of insulin and glucagon in diabetic patients.

(a) Compare the actions of insulin and glucagon in controlling blood glucose.

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(4)

**[Total: 4 marks]**

**Q51.** Plants respond to external stimuli.

(a) Describe one example of a plant using gibberellins.

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(2)

(b) State one commercial use of ethene in agriculture.

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(1)

**[Total: 3 marks]**

**Q52.** Hormonal coordination in the menstrual cycle can be manipulated.

(a) Explain how FSH and LH are involved in the menstrual cycle.

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(3)

(b) Describe how progesterone is used in contraceptive pills.

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(2)

**[Total: 5 marks]**

**Q53.** A study is conducted on brain surgery techniques.

(a) Name one method used to study brain function.

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(1)

(b) Explain one risk of brain surgery.

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(2)

**[Total: 3 marks]**

**Q54.** Researchers use artificial pancreas systems in diabetic patients.

(a) What is meant by a negative feedback system?

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(2)

(b) Explain why an artificial pancreas might benefit a patient more than insulin injections.

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(3)

**[Total: 5 marks]**

**Q55.** Plants grow towards light to maximise photosynthesis.

(a) Describe the role of auxin in phototropism.

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(2)

(b) Suggest how this knowledge could be used in agriculture.

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(2)

**[Total: 4 marks]**

**Q56.** The brain has many complex functions.

(a) State the function of the medulla.

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(1)

(b) Describe one way neuroscientists study the brain.

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(2)

**[Total: 3 marks]**

**Q57.** The eye focuses light using its internal structures.

(a) Describe how the eye changes to focus on a near object.

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(3)

**[Total: 3 marks]**

**Q58.** Hormones play a role in metabolism.

(a) State one role of adrenaline in the body.

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(1)

(b) Explain how thyroxine affects metabolism.

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(2)

**[Total: 3 marks]**

**Q59.** A graph shows blood glucose levels after a meal.

(a) Describe what happens to blood glucose levels after eating and how the body brings them back to normal.

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(3)

**[Total: 3 marks]**

**Q60.** A new hormone treatment is being tested for regulating fertility.

(a) Discuss the benefits and risks of using hormones in fertility treatment.

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(6)  
**[Total: 6 marks]**