Key Knowledge for B5- Homeostasis + Response (Higher Tier)

Homeostasis	
1. What is homeostasis?	• Maintaining constant internal conditions. • Important to maintain optimum (best) conditions for enzymes
2. What is negative feedback?	• When something moves away from the normal level, eg. glucose, it is then brought back to the normal level.
Nervous System	
3. What is the central nervous system (CNS) made up of?	• Brain and spinal cord
4. What is the role of the nervous system?	• To carry messages in the form of electrical impulses around the body.
5. How are neurones adapted to their function?	• Neurones can carry electrical impulses • Neurones are long • Neurones are insulated • Neurones are branched
6. What are the stages in a nervous response?	1. Stimulus 2. Receptor 3. Sensory neurone 4. Co-ordinator 5. Motor neurone 6. Effector
7. What is a reflex action?	• A rapid and automatic nervous response that by-passes the conscious parts of the brain
8. Why are reflex actions important?	• Protect us from harm
9. What co-ordinates the response?	• The relay neurone
10. What is a synapse?	• A gap or junction between neurones (nerve cells)
11. What happens at the synapse?	• Chemicals are released • They diffuse across the synapse • They trigger an impulse in the next neurone

Endocrine System	
12. What is the endocrine system?	• A group of glands that release hormones into the bloodstream
13. Name 6 glands	• Pituitary gland • Thyroid • Adrenal • Ovaries • Testis • Pancreas
14. Why is the pituitary gland called the master gland?	• Produces several hormones which then, in turn, cause other glands to produce hormones
15. What are hormones?	• Chemical messengers • Travel in the bloodstream to target organs
16. How is the endocrine system different than the nervous system?	The endocrine system is: • slower to act • longer-lasting
17. Where is adrenaline produced?	• Adrenal glands
18. What effect does adrenaline have?	• Increases the heart rate and boosts delivery of oxygen and glucose to the brain and muscle. • Prepares the body for 'fight or flight'
19. Where is thyroxine produced?	• Thyroid gland
20. What effect does thyroxine have?	• Stimulates the basal metabolic rate • Plays an important role in growth and development
21. How are thyroxine levels maintained	• By negative feedback

Control of Blood Glucose	
22. Which organ monitors and controls your blood glucose concentration?	• The pancreas
23. Which hormone is released if there is **too much** glucose in the blood?	• Insulin
24. Which hormone is released if there is **too little** glucose in the blood?	• Glucagon
25. What effect does insulin have?	• Causes **glucose** to be stored in the muscle + liver cells as **glycogen**
26. What effect does glucagon have?	• Causes **glycogen** to be converted into **glucose** and released from liver + muscle cells into the blood
27. Which type of diabetes is inherited?	• Type 1
28. Which type of diabetes is caused by lifestyle?	• Type 2
29. What is wrong with a person if they have type 1 diabetes?	• They are not producing enough insulin
30. How is type 1 diabetes treated?	• Insulin injections
31. What are the advantages/ disadvantage of a pancreas transplant for someone with type 1 diabetes?	• <u>Advantages</u>- permanent cure, no need to inject insulin, glucose levels remain more constant • <u>Disadvantages</u>- pancreas may be rejected/ have to take drugs to suppress immune system
32. What is wrong with a person if they have type 2 diabetes?	• Muscle/ liver cells are not responding to the insulin
33. How is type 2 diabetes treated?	• Exercise and low-sugar diet

Menstrual Cycle	
34. In the menstrual cycle how often is an egg released?	• Every 28 days
35. What is the release of an egg called?	• Ovulation
36. What are the 4 hormones involved in the menstrual cycle?	• FSH • LH • Oestrogen • Progesterone
37. Which gland produces FSH and LH?	• Pituitary gland
38. Which gland produces oestrogen?	• Ovaries
39. What is the role of FSH?	• Causes egg to mature • Stimulates ovaries to produce oestrogen
40. What is the role of oestrogen?	• Causes the wall of the uterus to build up • Stimulates LH production • Inhibits FSH
41. What is the role of LH?	• Causes an egg to be released (ovulation)
42. What is the role of progesterone?	• Maintains the uterus lining • Inhibits FSH and LH
43. What is the main reproductive hormone in men and what is its function?	• Testosterone • Stimulates sperm production

Contraception	
44. How do oral contraceptives work?	• Contain oestrogen/ progesterone • Inhibit FSH • No eggs mature
45. How do injections, implant or skin patch work?	• Progesterone released over a long period of time • Inhibits FSH and LH • No eggs mature, no eggs released
46. How do barrier methods work?	• Condoms prevent the sperm reaching an egg
47. How does an intrauterine device work?	• Prevents the implantation of an embryo
48. How does a spermicide work?	• Kill sperm
49. How does abstaining work?	• Don't have sex
50. How does sterilisation work?	• Female- fallopian tubes are tied- egg can't get through • Male- Sperm ducts are tied- sperm can't get through
Treating Infertility	
51. How do fertility drug work?	• Contain FSH + LH • Ensure hormone levels are high enough to mature + release an egg
52. What does IVF involve?	• Mixing egg and sperm in a lab • Embryos develop • 1 or 2 embryos are transferred into mother's uterus
53. What are the disadvantages of IVF?	• Low success rates • Expensive • Can lead to multiple births (more risky) • Unused embryos are destroyed (ethical issues)