

5.7.13 Discuss the ethical issues of IVF.

Ethical issues around IVF can involve the biological/social parenthood, the property of frozen embryos after the parents divorce or die, elderly mothers (e.g. in Italy), 'superbabies'. Since the embryos are outside the mother's body, it is possible to determine the gender by checking the chromosomes. So parents could specify that they only want to use the embryos of one sex and not the other. They could even choose to only use those sperm cells that have the chosen sex chromosome (X or Y) so that all embryos would be of the chosen sex. Do not confuse IVF with donor insemination where the sperm of a man is placed inside a woman and fertilisation may occur in vivo ('in life').

EXERCISE

1. Salivary amylase works best at a pH of:

- A 5-6
- B 6-7
- C 7-8
- D 8-9

The diagram opposite shows a schematic representation of the digestive tract.

Questions 2-4 refer to the labels on this diagram.

2. Label X points to the:

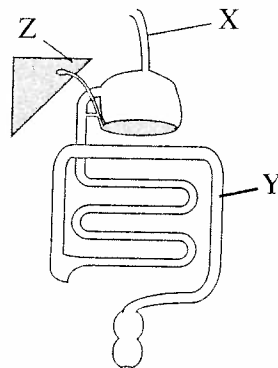
- A liver.
- B oesophagus.
- C stomach.
- D colon.

3. Label Y points to the:

- A liver.
- B oesophagus.
- C stomach.
- D colon.

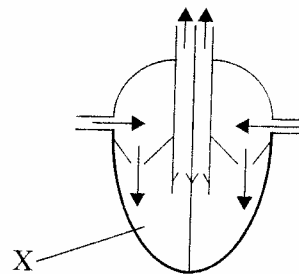
4. Label Z points to:

- A liver.
- B oesophagus.
- C stomach.
- D colon.



Human Health and Physiology

5. The process by which the body takes up the substances that it needs is known as:
- A digestion.
 - B absorption.
 - C excretion.
 - D respiration.
6. Carbohydrates and proteins are known as:
- A micronutrients.
 - B macronutrients.
 - C dietary fibre.
 - D minerals.
7. Scurvy is a consequence of dietary deficiency in:
- A Vitamin A.
 - B Vitamin B₁₂.
 - C Vitamin C.
 - D Vitamin D.
8. The part of the heart labelled X in the schematic diagram is the:
- A tricuspid valve.
 - B aorta.
 - C right ventricle.
 - D right atrium.
9. The electrochemical impulses that trigger the contractions of the heart originate in the:
- A sino atrial node.
 - B brain.
 - C spinal cord.
 - D atrio ventricular node
10. The main blood vessels are the arteries, veins and capillaries. In order of decreasing blood pressure, these should be arranged:
- A arteries, veins, capillaries.
 - B veins, capillaries, arteries.
 - C capillaries, arteries, veins.
 - D arteries, capillaries, veins.



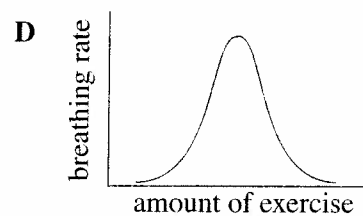
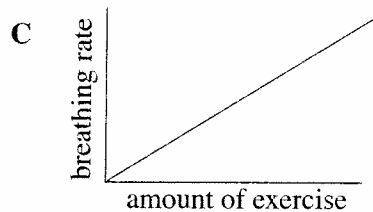
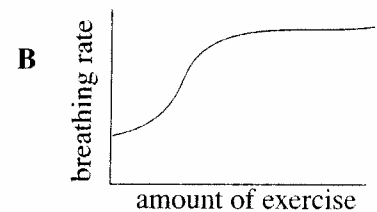
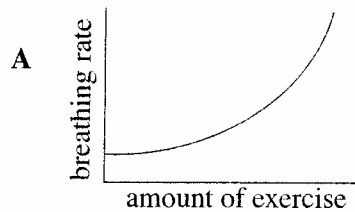
- 11.** Approximately 90% of blood cells are:
- A erythrocytes.
 - B leucocytes.
 - C thrombocytes.
 - D plasma.
- 12.** The main mechanism by which the body restricts infections of the stomach is its:
- A alkalinity.
 - B acidity.
 - C large surface area.
 - D mucous secretions.
- 13.** A globular protein that recognises an antigen is known as:
- A a virus.
 - B a bacterium.
 - C an antigen.
 - D an antibody.
- 14.** Which one of the following are features of alveoli that allow them to carry out gas exchange efficiently?
- A small surface area.
 - B their thinness.
 - C their very high moisture content.
 - D limited blood supply.
- 15.** Very small organisms such as algae do not need gills or lungs because:
- A they have a comparatively small surface area to volume ratio that allows them to exchange nutrients and waste products with their environment.
 - B they have a comparatively large surface area to volume ratio that allows them to exchange nutrients and waste products with their environment.
 - C they have a comparatively small surface area to volume ratio which means that they need very little food to survive.
 - D they have a comparatively small mass which allows them to exchange nutrients and waste products with their environment.
- 16.** The ribs are moved by the:
- A intercostal muscles.
 - B diaphragm.
 - C alveoli.
 - D thorax.

Human Health and Physiology

17. Cell respiration differs from breathing in that it:

- A involves muscle movement.
- B is gaseous exchange.
- C requires energy.
- D is the process of releasing energy from the products of food digestion.

18. Which one of the following graphs shows the rate at which an athlete would breathe with increasing (sustainable) exercise:



19. The process of temperature regulation in the human body is an example of:

- A homeostasis.
- B respiration.
- C excretion.
- D dilation.

20. The control of a process by the result or effect of the process in such a way that an increase or decrease in the results or effects is always reversed is known as:

- A convection.
- B negative feedback.
- C positive feedback.
- D shivering.

21. The main function of the kidney is:

- A vitamin synthesis.
- B filtration.
- C regulation of blood sugar levels.
- D excretion and osmoregulation.

- 22.** The main function of the amniotic sac and fluid is to:
- A transport the ovum.
 - B protect the foetus
 - C assist in fertilisation.
 - D prevent conception.
- 23.** During birth, oxytocin causes:
- A the contractions of the uterus to become shorter and weaker.
 - B pain reduction.
 - C the contractions of the uterus to become longer and stronger.
 - D the baby to begin breathing.
- 24.**
- a. Explain what is meant by 'a balanced diet'.
 - b. List the groups of substances that are part of a balanced diet.
 - c. Outline the importance of each of the groups.
- 25.**
- a. Why do arteries have thick walls?
 - b. Why does the blood in capillaries flow at a relatively low speed?
 - c. Why do many veins have valves?
- 26.**
- a. Outline the effect of the HIV virus on the immune system.
 - b. Outline normal antibody production.
 - c. Explain why the HIV virus interferes in antibody production.
- 27.**
- a. Draw a diagram of the human respiratory system.
 - b. What features of alveoli make them suitable for gaseous exchange?
 - c. Why do lungs need to be ventilated?
- 28.**
- a. List the elements that are involved in thermoregulation in humans.
 - b. Describe how the organism can reduce heat loss.
 - c. Outline the processes of conduction, convection and radiation.
 - d. Which one causes most heat loss from a human?
- 29.**
- a. Describe how sexual reproduction promotes genetic variation.
 - b. Birth control pills contain substances resembling oestrogen and progesterone. Explain how keeping these hormones in the blood at a high level prevents pregnancy.