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SECTION A

Answer any THREE questions in this section.

If you answer Question 1, put a cross in this box .

1. Fats are an essential part of the human diet.

(a) Describe how you would test a sample of dried food to find out if it contained fat.

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(ii) Explain how a one-way flow of blood through each side of the heart is maintained.

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(iii) Sometimes a baby is born with a small hole in the heart wall between the right and left atria. This allows blood to pass from one side of the heart to the other.

Suggest and explain how the child may be affected later in life if this hole does not close up.

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(b) The heart is made of cardiac muscle. Describe **three** ways in which this differs from skeletal muscle.

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(c) Describe how a person's diet can help maintain a healthy heart.

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(Total 20 marks)

Q2

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(ii) Explain how some proteins control the metabolic activity of the cell.

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(b) As growth continues, cells may divide by mitosis.

(i) Explain why mitochondria are important both for protein formation and for mitosis to occur.

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If you answer Question 4, put a cross in this box ☒ .

4. The female reproductive system ensures the production of ova and the correct conditions for the development of an embryo.
- (a) Draw a large, fully labelled diagram to show the structure of the female reproductive system.

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(b) The rate of breathing may increase during exercise.

(i) How is this change in the rate of breathing brought about?

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(ii) Explain why this change in rate is important.

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(c) Sometimes the rate of breathing does not increase enough to meet the energy demand of the body. Tissues may begin to respire anaerobically.

Explain the effect that anaerobic respiration has on the body.

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Q5

(Total 20 marks)

TOTAL FOR SECTION A: 60 MARKS



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SECTION B

Answer any TWO questions in this section.

If you answer Question 6, put a cross in this box .

6. Many bacteria are pathogenic to humans.

(a) (i) Draw a large, labelled diagram to show the structure of a typical bacterium.

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(ii) Describe how bacteria obtain the nutrients that they need.

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(b) Tuberculosis is a disease caused by a bacterium. This disease spreads easily in overcrowded and unhygienic conditions.

(i) Describe how tuberculosis is normally transmitted from person to person.

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(ii) Describe how a person found to have contracted tuberculosis should be treated and explain why early detection of the disease is important for the patient.

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(c) The incidence of tuberculosis has fallen rapidly since the 1930s.

Suggest some of the reasons for this fall.

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(d) In some countries there has recently been a rise in the number of new cases of tuberculosis. Suggest reasons for this rise.

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(Total 20 marks)

Q6

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(ii) Describe how the lining of the trachea and of the bronchi is damaged by cigarette smoke.

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(Total 20 marks)

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Q7



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If you answer Question 8, put a cross in this box ☒ .

8. Many microorganisms have an important role in the human environment.

(a) (i) Describe the role of microorganisms in the decomposition of organic matter.

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(ii) Describe and explain the conditions in which decomposition occurs most readily.

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(iii) Explain why decomposition is an essential process for the environment.

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(ii) Explain why the percentage concentration of carbon dioxide in the atmosphere has remained almost constant for thousands of years.

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(b) (i) Recent figures show that carbon dioxide levels in the air have risen over the last 50 years.

Suggest reasons for this rise.

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(ii) Polluted air sometimes contains carbon monoxide. Describe and explain how humans are affected by this gas if it is inhaled.

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Q9

(Total 20 marks)

TOTAL FOR SECTION B: 40 MARKS

TOTAL FOR PAPER: 100 MARKS

END

