Higher Combined version — Higher Tier (★) included; Separate-only (◆) removed.

Q1. Compare aerobic and anaerobic respiration in animals in terms of oxygen, products, energy released and location.

[4 marks]

Q2. Explain what is meant by an oxygen debt and how it arises.

[3 marks]

Q3. Write the word equation for fermentation in yeast and give ONE commercial use.

[2 marks]

Total: 9 marks

Respiration (B1c)

Q1 (4 marks)

Compare aerobic and anaerobic respiration in animals in terms of oxygen, products, energy …

- Aerobic: uses O■; anaerobic: no O■ [1]
- Aerobic: CO■ + water; anaerobic: lactic acid [1]
- Aerobic: much more energy; anaerobic: little energy [1]
- Aerobic: mitochondria; anaerobic: cytoplasm [1]

Q2 (3 marks)

Explain what is meant by an oxygen debt and how it arises.

- During intense exercise, muscles switch to anaerobic respiration → lactic acid accumulates [1]
- After exercise, extra O■ needed to convert lactic acid back to glucose (in liver) [1]
- This extra O■ requirement = oxygen debt — explains continued heavy breathing after stopping [1]

Q3 (2 marks)

Write the word equation for fermentation in yeast and give ONE commercial use.

- Glucose → ethanol + carbon dioxide [1]
- Brewing (beer/wine) OR bread-making (CO■ makes dough rise) [1]