

## RESPIRATION MARKING SCHEME

1. 1992 Q7 P1

- a) Cellulose ethanol + Carbon → Energy/heat energy/210 KJ
- b) -Manufacture/production of ethanol (in breweries)/bread making.

2. 1993 Q9 P1

$$\frac{\text{(Volume of CO}_2\text{ produced.)}}{\text{(Volume of O}_2\text{ )}} \qquad \text{Rej. CO}_2\text{ } \frac{\quad}{\text{O}_2}$$

3. 1994 Q4 P1

- A baby has a large surface area to volume ratio than an adult.

4. 1996 Q14 P1

- a) CO<sub>2</sub> diffuses into tracheoles follows the trachea; not through spiracles
- b) Stomata pores / stomata; cuticle  
Acc. Lenticels.

5. 1997 Q3 P1

- Alcohol, carbon dioxide and energy;
- accept Ethanol, C<sub>2</sub>H<sub>5</sub>OH/CH<sub>3</sub>H<sub>2</sub>OH.

6. 2000 Q15 P1

- (a) (i) 78/78 mg/ 100cm<sup>3</sup>
- (ii) 8.5<sup>th</sup> and 29.5<sup>th</sup> / 8min 30 sec and 29 min 30 sec
- (i) 47 mg/100cc; Acc. 47
  
- (b) - The demand for oxygen is more than the supply  
- leading to anaerobic respiration. Acc. Lactic acid converted to glucose/Glycogen
  
- (c) Lactic acid is oxidized ( to form CO<sub>2</sub> and H<sub>2</sub>O)  
Acc. *Lactic acid is converted to glucose/ glycogen*

7. 2002 Q18 P1

- (a) – For exchanged axis award maximum 3 marks for points x identity  
The scale must however be correct. For graphs on separate axis mark both and award the highest mark.

- (a) Axis = 2
- (b) Scale = 1
- (c) (Plotting)= 1
- (d) curves)= 1

- (b) X = 120 + -3)
- Y = 140 + -3

- (c) Person X is capable of regulating glucose while person y is likely to be diabetic.
- (d) X insulin released, excess glucose is converted into glycogen ( in liver) must be mentioned if insulin is not mentioned  
Y Insulin not released, thus the decline is due to glucose being released in urine.
- (e) A.T.P / Adenosine triphosphate
- (f) Deaminated; resulting in formation of ammonia  
Ammonia combines with CO<sub>2</sub> to form urea ( and H<sub>2</sub>O); Urea is passed out in Urine carbohydrate group is oxidized/ stored as glycogen

**8. 2003 Q1 P1**

- a) Anaerobic respiration / fermentation; Acc. Alcohol production / drawing dough.
- b) Brewing/ Baking.

**9. 2004 Q4 P1**

- Ethanol / Alcohol
- Energy / ATP/ 210kj / heat;
- Rej. atp, formula of alcohol.*

**10. 2005 Q6 P1**

Lactic acid

**11. 2006 Q13 P1**

- (a) - A.T.P/ adenosine triphosphate rej A.T.P
- (b) -Brewing of alcohol accept examples;
  - Baking of bread.
  - Biogas production
  - Compost manure formation
  - Silage formation
  - Commercial production of citric acid
  - Sewage treatment.

**12. 2006 Q24 P1**

- Thin walls/ thin epithelium for faster diffusion of gases/ to reduce distance for faster diffusion.
- Moist for dissolving gasses
  - Large surface area for maximum diffusion/ gaseous exchange
  - Highly vascularized to facilitate diffusion/ to enhance gradient.
  - Speed up diffusion

**13. 2006 Q25 P1**

- (a) A mouse has a larger surface area to volume ratio than a dog, hence losses more energy per unit body weight/ mouse losses heat faster than a dog.

- 14. 2007 Q13 P1**  
 (a) (i) Ethanol and carbon (iv) oxide  
 (ii) Lactic acid  
 (b) It is the state when human body undergoes anaerobic respiration producing lactic acid. Oxygen has to be taken into the body to break the lactic acid
- 15. 2008 Q3 P2**  
 (a) Photosynthesis  
 (b) Light (energy)  
 Chlorophyll  
 (c) Oxygen – used in respiration, oxidation  
 Released into the atmosphere  
 Glucose – used in respiration  
 Converted to sucrose or starch for storage  
 Used in formation of sturdiness allulose cell wall/ cytoplasm
- 16. 2009 Q27 P1**  
 Baking / brewing  
*Rej: formation of butter, cream, glucose*  
 - Formation of dairy products – cheese, yoghurt, sour milk;  
 - Formation of organic acids – oxalic acid, Vinegar (Ethamic acid, citric acid, butyric acid)
- 17. 2010 Q5 P1**  
 -A large surface area for efficient diffusion of gases  
 -Moist for gases to diffuse in solution form/to dissolve gases  
 -Thin for efficient/diffusion of gases (across a short distance)  
 - Most be close to body cells/well supplied with blood vessel to active cells  
 - Ventilation mechanism for bringing in air rich in O<sub>2</sub> and expelling air rich in carbon(iv) oxide
- 18. 2011 Q10 P1**  
 i) Lactic acid in animals while in plants it is ethanol / alcohol;  
 ii) No carbon IV oxide produced in aerobic respiration in animals while anaerobic respiration in plants produces carbon IV oxide (2 marks)
- 19. 2011 Q19b P1**  
 a) Glucose + oxygen  $\longrightarrow$  carbon IV oxide + water + energy  
 (1 mark)
- 20. 2012 Q7 P1**  
 (a) Respiration  
 (b) (potassium hydroxide) removes/absorbs CO<sub>2</sub> (from atmospheric air);  
 (c) L- Lime water remains clear because carbon (IV) oxide has been removed  
 N- Lime water forms a white ppt/turbid because the respiring cockroaches

produce carbon (IV) oxide

**21. 2012 Q14 P2**

(a) Aerobic respiration

(b) Releases more energy (per unit mass)

NB (b) tied to (a)