* + 1. **[Respiration  (18 Lessons)](http://www.elimu.net/Secondary/Kenya/KCSE_Student/Biology/Form2/Respiration/KCSE%20Biology%20Curriculum%20Form%20I-Respiration.htm)**

1. a) RQ =  ;

 

 b) It gives the type of substrate undergoing respiration;

 It gives the type of respiration taking place;

2. (a) Anaerobic respiration; ref. respiration alone.

* 1. Alcohol/ethanol;
	2. - Brewing; ¹
		+ Bread baking; ¹
		+ Making of yoghurt; Any 2 x 1

3. Similarity

 Both are bound by a double membrane; ¹

 Difference

 Mitochondion Chloroplast

* 1. Inner membrane is folded - Inner membrane not folded; ¹
	2. Has matrix (and cristae) - Has grana (and stroma); ¹ (Mark as a whole;)

4. (a) A mouse has a larger surface area to volume ratio than a goat. (1mk); hence loses more energy per unit body weight/mouse loses heat faster than a goat. (1mk);

Acc. A mouse has a larger surface area to volume ratio; hence loses more energy per unit body weight.

(b) Ethanol/C2H5.OH/CH3 CH2 OH (1mk); carbon (IV) oxide/CO2 (1mk); Rej. Carbon dioxide.

5. (a)

(1 mk)  *CO produced*

 *O*2 *consumed*

2

0.7

145

102





 (b) Fats (1mk);

6. a) Anaerobic respiration; (1mk)

* 1. Lactic acid; (1mk)
	2. - In brewing industry;
		1. In baking industry;
		2. In sewage treatment;
		3. In biogas production;
		4. In making of silage;
		5. In production of yoghurt; Max 2
	3. - Oxidised to carbon (IV) oxide, water and energy;
		1. Convertedto glucose in the liver, then to glycogen and stored. (2mks)

|  |  |  |  |
| --- | --- | --- | --- |
| (e)  |   | Aerobic respiration  | Photosynthesis  |
|   | (i)  | Oxygen is used.  | - Oxygen is given out;  |
|   | (ii)  | Carbon (IV) oxide.  | - Carbon (IV) oxide is used up;  |
|   | (iii)  | ATP is produced.  | - ATP is used up;  |
|   | (iv)  | Water is given out,  | - Water is used;  |
|   | (v)  | Glucose is broken down.  | - Glucose is formed;  |
|   | (vi)  | Occurs in the mitochondrion.  | - Occurs in the chloroplast;  |

7.

|  |  |
| --- | --- |
| Aerobic  | Anaerobic  |
| Oxygen necessary  | Oxygen not necessary  |
| More energy released 36 ATPs  | Less energy released 2ATPs  |
| Slow energy reduced in small amounts  | Energy released faster over a short period  |
| End product is H2O CO2  | End product alcohol in pl and lactic  |
| Occurs in cytoplasm and mitochondria  | Others in cytoplasm  |

 Max 2

8. a) Alcohol/ Ethanol carbon ( iv) oxide; Reject ethanol and alcohol

 b) Energy / pyruvic acid;

1. (a) In the 1st phase glucose is broken down without O2 to Pyruvic acid in a series of reactions in a process known as glycolysis.

 If O2 is not present the pryruvic acid is broken down partially to lactic acid in animals or ethanol +

 CO2 in plants.In glycolysis 1 molecule of glucose yield 2 molecules of RATP.

* 1. Plants & rats use O2 for respiration and produce co2. Absence of light means photosynthesis will not take place in plants hence co2 level goes up.

 The rats after sometime will suffocate because of less oxygen for respiration and may die.

10. a) A – Condensation; B – Hydrolysis;

* 1. Sucrose;
	2. Glycosidic;

11. (a) Fermentation / Alcoholic fermentation / Anaerobic respiration; (b) Drive off dissolved oxygen/air; from the glucose solution.

* + 1. To avoid denaturing the enzymes in yeast cell / destroy zymase enzymes;
		2. Calcium hydroxide forms a white precipitate;
		3. Calcium hydroxide remains colourless;
		4. Lipid / fat or Oil; (1 mark)

 R.Q = Volume of CO2 produced; 0.7 = CO2 = 7 litres;

 Volume of O2 used 10

12. (a) maintain a constant body temperature (Independent of temperature of surrounding);

 (b) (i) Decrease in metabolic activities.

* + 1. Denature enzymes thus slow down metabolic activities.
		2. This is due to no production of insulin which acts on the liver cells so as to lower blood sugar level by converting glucose to glycogen.

13. a) 1.0

 0.7

 0.7

 1.0 (2marks)

 b.) Fats Dog and Sheep.

 Carbohydrates mouse, horse (2marks)

14. (i) Condensation; √1

* 1. Water; √1 (reject chemical formula)

15. (i) Aerobic respiration;

(ii) Glucose is broken down – presence of oxygen;

iii) The products are carbon(iv) oxide, water and energy) (2mks) (ii) RQ = Volume of CO2 produced

 Volume of O2 used (2mks)

(iv) Lipids; (1mk)

(v) Production of energy in form ATP; energy is required in metabolic processes; (1mk)

(vi) Mitochondrion; (rej. mitochondria) (1mk)

16. a) Young people are actively /rapidly growing hence require more energy than older people

 **NB**:growth has to be mentioned

b. Manual workers require more energy than secretary workers

c. Males are more muscular hence require more energy than females

17. (a) Heat from the body is not lost to the surrounding through sweating because evaporation of sweat will be low; as air is already saturated with moisture; (2mks)

b) Hypothalamus; (1mk)

18. (i) RQ = volume of CO2 produced

 Volume of O2 consumed

 102 CO2 = 0.7

 145 O2

* 1. Lipid: cc fats/oil (1 mk)
	2. Adenosine triphosphate (ATP)

19. a) Complete oxidation of lipids require a lot of oxygen; lipids are insoluble in water hence difficult to transport in the body complete oxidation of lipids take a longer time *any 2*

 b) - maltose

 - lactose *2mks*

20. a) To show that soaked seeds produce heat when they respire; *1mk*

* 1. In flask A there was increase in thermometer reading; in flask B there was no noticeable increase in thermometer reading/ thermometer reading remained constant;
	2. In flask A soaked seeds respire aerobically to produce heat energy which raised the temperature in the flask: in flask B no respiration; no heat was produced hence no increase in temperature / thermometer reading; d) Vacuum flasks do not allow heat to enter to leave;
	3. Flasks should be filled with seeds to ensure that the bulb is covered; bulb of thermometer
	4. To kill bacteria / micro-organisms which would otherwise respire, giving wrong results