Oxford Cambridge and RSA

A Level Biology B

H422/01 Fundamentals of biology

Question Set 11

1. (a) Aerobic respiration involves a series of reactions.

The table below gives three types of reaction involved in aerobic respiration.

Complete the table by inserting, for each type of reaction:

- **one** metabolic pathway in which the reaction occurs
- the precise location of the metabolic pathway in the cell.

For example, dehydrogenation is a reaction of the Krebs cycle, which occurs in themitochondrial matrix.

The first row has been done for you.

Type of reaction	Metabolic pathway	Precise location in cell
Dehydrogenation	Krebs cycle	mitochondrial matrix
Oxidative decarboxylation	....	....
Substrate level phosphorylation	....	....

[2]

(b) (i) The unbalanced equation for the aerobic respiration of a substrate is shown below.

$C_{16}H_{32}O_2$ + ... O_2 → ……..CO_2 +…….H_2O

Balance the equation above by writing the correct numbers in the blank spaces. **[1]**

(b) (ii) Calculate the respiratory quotient (RQ) of this respiratory substrate. Give your answer to **two** significant figures. **[2]**

(b) (iii) Suggest **one** reason for an RQ greater than 1 in an organism respiring aerobically. **[1]**

(c)* A respirometer is used to investigate the rate of respiration.

Fig. 34 shows the setup of a respirometer with two chambers.

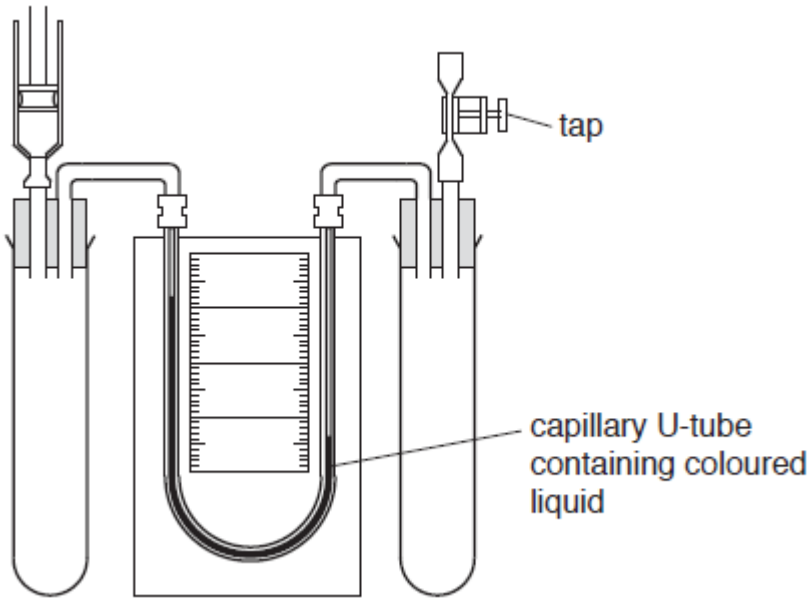

Fig. 34

Discuss how the respirometer in Fig. 34 can be used to calculate the RQ of germinating peas.

[6]

Total Marks for Question Set 11: 12