Name of the Student:_____
Max. Marks : 26 Marks **Time : 26 Minutes**

Mark Schemes

Q1.

(a) Marks awarded for this answer will be determined by the Quality of Communication (QC) as well as the standard of the scientific response. Examiners should also refer to the information in the Marking guidance and apply a 'best-fit' approach to the marking.

0 marks
No relevant content.

Level 1 (1−2 marks)
The method described is weak and could not be used to collect valid results, however does show some understanding of the sequence of an investigation.

Level 2 (3−4 marks)
The method described could be followed and would enable some valid results to be collected, but lacks detail.

Level 3 (5−6 marks)
The method described could be easily followed and would enable valid results to be collected.

Examples of the points made in the response:
- bean seedlings of same age
- cut material from same part of each organ (for repeats) e.g. top 1 cm of stem / a whole cotyledon / seed
- equal mass of each organ
  accept weight for mass
- grind / homogenise
- in equal amounts of water / buffer
- equal volumes of hydrogen peroxide solution
- equal concentrations of hydrogen peroxide solution
- same temperature
- temperature maintained in water bath
- quantitative measure of gas production eg height of foam in mm / collect gas in graduated syringe in cm^3
- for same time period
- repetitions (3+ times)
- calculate mean for each.

6

(b) (i) correct answer: 40
1 *mark for 45 as the anomalous result has been included in the calculation*
or

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$\frac{(38 + 41 + 42 + 39)}{4}$

1 *mark for*

$\frac{160}{4}$

or

2

(ii) vertical axis correctly labelled:
'Enzyme activity in arbitrary units'

allow ecf from (b)(i)

1

points plotted correctly ±1 mm

*deduct **1** mark for each incorrect plot*

2

suitable line of best fit

not feathery, not point to point

1

(iii) 6.0 / 6

allow ± 0.1

if 6.0 not given, allow correct for candidate's graph ± 0.1

1

(iv) in range 0 to 14 units

allow correct for candidate's graph

1

(v) enzyme denatured / enzyme (active site) shape changed

allow substrate no longer fits (active site)

ignore reference to temperature

do not allow enzyme dies

1

[15]

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Q2.

(a) any **two** from:

- carbon dioxide / CO_2
- urea
- protein
- water / H_2O
- hormones / insulin.

ignore food / waste / alcohol / drugs / enzymes

ignore glucose and oxygen

*allow **two** correct hormones for 2 marks*

*allow **two** correct food components for 2 marks*

allow antibodies

allow antitoxins

2

(b) (i) plasma

1

platelets

1

(ii) (cardiac) muscle

allow muscular

1

(c) Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information in the Marking Guidance and apply a 'best-fit' approach to the marking.

0 marks
No relevant content

Level 1 (1−2 marks)
There is a description of at least one advantage of the cow tissue valve
or
a description of at least one disadvantage of the cow tissue valve.

Level 2 (3−4 marks)
There is a description of at least one advantage of the cow tissue valve
and
at least one disadvantage of the cow tissue valve.

Level 3 (5−6 marks)
There is a description of the advantages and disadvantages of the cow tissue valve
or
a description of several advantages of the cow tissue valve and at least one disadvantage.

Examples of the points made in the response

Advantages of cow tissue valve:

- abundant supply of cows
- so shorter waiting time

  ignore can take many years to find a suitable human donor
- no need for tissue typing
- quicker operation

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- less invasive **or** shorter recovery time
- cheaper operation costs
- less operation / anaesthetic risks.

Disadvantages of cow tissue valve:

- made from cow so possible objections on religious grounds
  ignore ethical arguments
- new procedure so could be unknown risks
  allow possible transfer of disease from cow
- risks of using a stent eg. blood clots, stent breaking or valve tearing
- not proven as a long term treatment
- may be rejected
  ignore information copied directly from the table without value added.

6

[11]

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