
BIOLOGY**5090/62**

Paper 6 Alternative to Practical

October/November 2017

MARK SCHEME

Maximum Mark: 40

Published

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Mark schemes will use these abbreviations:

| | |
|-------------------------|---|
| ; | separates marking points |
| / | alternatives |
| () | contents of brackets are not required but should be implied |
| R | reject |
| A | accept (for answers correctly cued by the question, or guidance for examiners) |
| Ig | ignore (for incorrect but irrelevant responses) |
| AW | alternative wording (where responses vary more than usual) |
| AVP | alternative valid point (where a greater than usual variety of responses is expected) |
| ORA | or reverse argument |
| <u>underline</u> | actual word underlined must be used by candidate |
| + | statements on both sides of the + are needed for that mark |

| Question | Answer | Marks | Guidance |
|----------|--|----------|--|
| 1(a) | Benedict's solution + potato ; heat / warm ; water bath / goggles or glasses / eye protection / don't heat directly ; | 3 | |
| 1(b)(i) | <u>blue</u> ; | 1 | |
| 1(b)(ii) | control / to show the colour (of Benedict's) when no (reducing) sugar / glucose present ; | 1 | |
| 1(c) | volume of (glucose) solutions ; volume / number of drops / concentration of Benedict's ; temperature ; | 3 | |
| 1(d)(i) | between 0.3 and 0.4 ; | 1 | A any value between 0.3 and 0.4 |
| 1(d)(ii) | use dilutions of glucose between 0.3% and 0.4% ; test each dilution with Benedict's ; compare colour of solution X with these colours ; | 2 | |

| Question | Answer | Marks | Guidance |
|----------|--|----------|----------|
| 1(e) | EITHER 2.5 cm ³ of glucose solution ; same volume / 2.5 cm ³ of water ; add / mix / shake / stir ; OR known / measured / stated volume of glucose solution ; same volume of water ; measure 5 cm ³ of diluted solution ; | 3 | |
| 1(f) | filter ; residue / solid dried + mass measured ; | 2 | |

| Question | Answer | Marks | Guidance |
|----------|---|----------|----------|
| 2(a)(i) | at least 55 mm diameter and \pm circular ; outline drawn with sharp pencil + continuous line + no shading anywhere ; vascular tissue delimited + inner darker area on photo indicated ; central vascular tissue correctly labelled ; | 4 | |
| 2(a)(ii) | 39 \pm 1 mm + measurement of drawing (\pm 1 mm) ; line drawn on drawing ; correct working for magnification ; correct calculation ; | 4 | |
| 2(b)(i) | axes fully labelled ; linear scale for vitamin C content + at least half of grid used in both directions ; four data values plotted correctly ; all bars ruled and of equal width ; | 4 | |
| 2(b)(ii) | boiling / cooking decreases vitamin C OR more vitamin C in uncooked / fresh than boiled ORA ; freezing decreases vitamin C OR more vitamin C in fresh than frozen ORA ; | 2 | |

| Question | Answer | Marks | Guidance |
|-----------|--|----------|----------|
| 2(b)(iii) | carrots of same age or type or species / same carrot ; same mass / volume of carrots used ; both cooking methods (oven, boiling) used ; same temperature / for same time / until ready to eat ; vitamin C test used / content determined after cooking ; expressed as mg per 100 g of carrot ; repeat and calculate mean / average ; | 4 | |

| Question | Answer | Marks | Guidance | | | | | | | | | | | | |
|---------------|---|---|---------------|-----------------|---------------|-----|---|--------------|--|---|-------------|------------------|----------------|----------|--|
| 3(a) | <table border="1"> <thead> <tr> <th></th> <th><i>normal</i></th> <th><i>abnormal</i></th> </tr> </thead> <tbody> <tr> <td><i>number</i></td> <td>6 ;</td> <td>–</td> </tr> <tr> <td><i>shape</i></td> <td>biconcave / disc-shaped / circular ;</td> <td>elongated / flat / long / pointed ;</td> </tr> <tr> <td><i>size</i></td> <td>small / short</td> <td>large / long ;</td> </tr> </tbody> </table> | | <i>normal</i> | <i>abnormal</i> | <i>number</i> | 6 ; | – | <i>shape</i> | biconcave / disc-shaped / circular ; | elongated / flat / long / pointed ; | <i>size</i> | small / short | large / long ; | 4 | |
| | <i>normal</i> | <i>abnormal</i> | | | | | | | | | | | | | |
| <i>number</i> | 6 ; | – | | | | | | | | | | | | | |
| <i>shape</i> | biconcave / disc-shaped / circular ; | elongated / flat / long / pointed ; | | | | | | | | | | | | | |
| <i>size</i> | small / short | large / long ; | | | | | | | | | | | | | |
| 3(b) | <p>abnormal cells cannot squeeze through / travel through / enter / get stuck in capillaries ;</p> <p>abnormal cells can cause blockages / stops or reduces or slows blood flow / damage capillaries / cause internal bleeding / increase blood pressure ;</p> <p>less oxygen transported ;</p> | 2 | | | | | | | | | | | | | |