

| Question number | Answer | Notes | Marks |
|-----------------|---|--|-------|
| 1 (a) | 1. cell membrane; 2. cytoplasm; 3. chromosome / nucleoid; 4. plasmid(s); 5. flagellum; 6. ribosome; 7. capsule; | 3. ignore DNA 4. ignore circle of DNA ignore incorrect structure label ignore correct structure labelled incorrectly or doesn't look like correct structure eg plasmid going to a straight line in cytoplasm | 3 |
| (b)(i) | S vertical scale linear and at least half grid; L neat lines drawn for bars; A axes labelled number of people and type of food / names of foods; P bars at correct height for ill and dead; K key to show ill and dead; | If scale not linear lose S and P Line graph loses L | 5 |

| | | | |
|------|--|---|---|
| (ii) | <p>1. cheese;</p> <p>2. indication of working 22% / 21.9% / 21.97% risk of death / 78% chance of living / ratio of 4.55;</p> | | 2 |
| (c) | <p>1. kill/destro bacteria / eq;</p> <p>2. whi blood cells;</p> <p>3. <u>ph</u>ocytes / <u>macrophage</u>;</p> <p>4. engul / surround / ingest / digest / eat / eq;</p> <p>5. <u>lymp</u>cytes;</p> <p>6. antibodies / anti xins;</p> <p>7. (b d to) antigens;</p> <p>8. mory cells;</p> | <p>phagocytosis = 2</p> <p>lymphocytes engulf = allow lymphocyte mark only</p> <p>phagocytes produce antibodies all phagocyte mark only</p> <p>white blood cells engulf = 2</p> <p>white blood cells produce antibodies = 2</p> | 5 |

Total 15 marks

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|--|--|---------------------------|--|--------|-----------------|--------|------------------------------|-----------|------------|--|---------------|----------|---|------|---------------------------|-----------------------|------------|--------|----------------------------|---|
| 2 (a) | <table border="1"> <thead> <tr> <th>Effect</th> <th>Name of hormone</th> <th>Source</th> </tr> </thead> <tbody> <tr> <td>converts glucose to glycogen</td> <td>(insulin)</td> <td>(pancreas)</td> </tr> <tr> <td>stimulates male secondary sexual characteristics</td> <td>testosterone;</td> <td>(testis)</td> </tr> <tr> <td>increases permeability of the collecting duct</td> <td>ADH;</td> <td>hypothalamus / pituitary;</td> </tr> <tr> <td>repairs uterus lining</td> <td>oestrogen;</td> <td>ovary;</td> </tr> </tbody> </table> | | | Effect | Name of hormone | Source | converts glucose to glycogen | (insulin) | (pancreas) | stimulates male secondary sexual characteristics | testosterone; | (testis) | increases permeability of the collecting duct | ADH; | hypothalamus / pituitary; | repairs uterus lining | oestrogen; | ovary; | Allow reasonable spellings | 5 |
| Effect | Name of hormone | Source | | | | | | | | | | | | | | | | | | |
| converts glucose to glycogen | (insulin) | (pancreas) | | | | | | | | | | | | | | | | | | |
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| repairs uterus lining | oestrogen; | ovary; | | | | | | | | | | | | | | | | | | |

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| (b) | 1. soluble / dissolves; 2. osmotic effect / eq; | Ignore small | 2 |
| (c) | X; | | 1 |

Total 8 marks

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|--|--|------------------|------------------------------|------------------------|-------------------|--------------|------------------------------------|-----------------------|----------------------|--|--|------------------------|-------------------------------------|-----------|---|---|---|--|---|
| 3 (a) | <table border="1"> <thead> <tr> <th>Group</th> <th>Can carry out photosynthesis</th> <th>Have a cell wall</th> <th>Can be pathogenic</th> </tr> </thead> <tbody> <tr> <td>bacteria</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>fungi</td> <td></td> <td>✓</td> <td>✓</td> </tr> <tr> <td>viruses</td> <td></td> <td>X</td> <td>✓</td> </tr> </tbody> </table> | Group | Can carry out photosynthesis | Have a cell wall | Can be pathogenic | bacteria | ✓ | ✓ | ✓ | fungi | | ✓ | ✓ | viruses | | X | ✓ | hybrid cross tick = 0 blank = 0 8 = 4 7/6 = 3 5/4 = 2 3/2 = 1 1/0 = 0 | 4 |
| Group | Can carry out photosynthesis | Have a cell wall | Can be pathogenic | | | | | | | | | | | | | | | | |
| bacteria | ✓ | ✓ | ✓ | | | | | | | | | | | | | | | | |
| fungi | | ✓ | ✓ | | | | | | | | | | | | | | | | |
| viruses | | X | ✓ | | | | | | | | | | | | | | | | |
| (b) | <table border="1"> <thead> <tr> <th>Characteristic</th> <th>Example of this process</th> </tr> </thead> <tbody> <tr> <td>they require nutrition</td> <td>eating food</td> </tr> <tr> <td>they respire</td> <td>releasing energy from carbohydrate</td> </tr> <tr> <td>movement / eq;</td> <td>some animals can fly</td> </tr> <tr> <td>they control their internal conditions</td> <td>blood glucose / blood pressure / body temperature / sweating / osmoregulation / eq;</td> </tr> <tr> <td>reproduce / eq;</td> <td>increase of the population of foxes</td> </tr> <tr> <td>they grow</td> <td>cells divide / increase in mass / size / get bigger / increase in height / eq;</td> </tr> </tbody> </table> | Characteristic | Example of this process | they require nutrition | eating food | they respire | releasing energy from carbohydrate | movement / eq; | some animals can fly | they control their internal conditions | blood glucose / blood pressure / body temperature / sweating / osmoregulation / eq; | reproduce / eq; | increase of the population of foxes | they grow | cells divide / increase in mass / size / get bigger / increase in height / eq; | | 4 | | |
| Characteristic | Example of this process | | | | | | | | | | | | | | | | | | |
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| 3 (c) | receptor / nerve ending; sensory neurone / sensory nerve; impulse / message / signal; CNS / spinal cord / grey matter; synapse; relay neurone / relay nerve; motor neurone ; muscle / effector; contract; | sensory or motor not in correct order = 0 ignore brain allow intermediate / association; | 5 |
| | | Total | 13 |

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|-----------------|---|---|-------|
| 4 (a) | <u>small surface area to volume</u> (ratio); less heat loss / less energy loss maintain body temp. / keep warm / fat insulation / eq; | allow small surface area to mass (ratio) | 2 |
| (b) | <u>insulation</u> / <u>insulator</u> / <u>insulated</u> ; trap air; less heat loss / less energy loss / maintain body temp. / keep warm / trap heat / eq; | | max 2 |
| 5 (c) (i) | muscles kept warm / eq; <u>contract</u> ; respiration; enzymes / optimum; | allow converse ignore work / move ignore answers that describe position in feet | max 3 |
| (ii) | strong / not elastic / eq; | allow descriptions of strength eg will not snap strong and elastic = 0 | 1 |
| (d) | less heat loss / less energy loss / maintain body temp. / keep warm / share body heat / trap heat / eq; shelter / protect / not exposed (cold/wind) / eq; decrease SA: Vol; | ignore protect from predators | 2 |

TOTAL 10 MARKS

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| 5 | <p>C noise and no noise / range of noise;</p> <p>O same species / mass / seeds / amount of crop / eq;</p> <p>R replication evident;</p> <p>M1 mass eaten / number eaten / count birds / eq;</p> <p>M2 time period stated;</p> <p>S1 weather / season / temperature / wind / same time of day / eq;</p> <p>S2 same number / species of bird / same area / field size / quadrat / eq;</p> | <p>allow amount / how much / how many</p> <p>allow temperature if in field</p> <p>ignore same field</p> | max 6 |

TOTAL 6 MARKS