

Food Production

Mark Scheme 5

| | |
|-------------------|-----------------------------|
| Level | IGCSE(9-1) |
| Subject | Biology |
| Exam Board | Edexcel IGCSE |
| Module | Single Award (Paper 2B) |
| Topic | Use of Biological Resources |
| Sub-Topic | Food Production |
| Booklet | Mark Scheme 5 |

Time Allowed: 46 minutes

Score: /38

Percentage: /100

Grade Boundaries:

| | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| >90% | 80% | 70% | 60% | 50% | 40% | 30% | 20% | 10% |

| Question number | Answer | Notes | Marks |
|-----------------|--|--|-------|
| 1 (a) | <i>Lactobacillus (bulgaricus)</i> / <i>Streptococcus (thermophilus)</i> ; | ignore lactic acid bacteria | 1 |
| (b) | sterilise / kill / pasteurise; bacteria / microorganisms / pathogens / eq; | ignore get rid of ignore denature enzymes ignore taste / competition / contamination / disease | 2 |
| (c) | 1 avoid <u>killing</u> <i>Lactobacillus</i> / bacteria / organisms (that make yoghurt); 2 <u>optimum</u> temperature; 3 enzymes; 4 (enzymes) denatured / destroyed; | ignore denature organism allow converse ignore make lactic acid / make yoghurt | 2 |
| (d) | (time) to make lactic acid; (warm) <u>optimum</u> temperature; enzymes; bacteria reproduction / bacteria growth / eq; | | max 2 |
| (e) | kills bacteria / stop growth of bacteria; low pH / more acid / acidic / lactic acid / eq; denatures/destroys enzymes / alters active site / eq; | allow microbes as eq to bacteria denatures bacteria = 1 | 3 |
| | | Total | |

| Question number | Answer | Notes | Marks |
|-----------------|---|--|-------|
| 2 (a) | <ol style="list-style-type: none"> 1. (nitrifying) bacteria; 2. ammonia/ammonium / into nitrites/NO₂ or nitrite into nitrate; | reject incorrect named bacteria such as nitrogen fixing allow Nitrosomonas / Nitrobacter ignore ammonia into nitrate | 2 |
| (b) | <ol style="list-style-type: none"> (root) nodules; 2. <i>Rhizobium</i> / nitrogen fixing bacteria; 3. <u>nitrogen</u> (gas) into nitrates / ammonia / ammonium; 4. amino acids / proteins; (ONCE) 5. growth / higher yield; 6. decomposition / decomposers / decay / rotting / eq; 7. (decomposing) bacteria / fungi / eq; 8. mineral (ions) / salts / nutrients / named mineral ion; | ignore fertiliser only allow point 8 if it is clear that the mineral ion has come from decomposition | Max 4 |
| (c) | respiration; not all eaten; not all digested; | | Max 2 |

Total 8 marks

| Question number | Answer | Notes | Marks |
|-----------------|---|-------------------------|-------|
| 3 (a) | <ol style="list-style-type: none"> 1. eat (more) plants / eats grass / eq; 2. food difficult to digest / less food digested / break down less food / food egested / eq; 3. cellulose; | allow converse for fish | 2 |
| (b) | <ol style="list-style-type: none"> 1. more cells / bigger; 2. heat loss; 3. use more energy in movement; | 3. igno move more | 1 |
| (c) | <ol style="list-style-type: none"> 1. keep indoors; 2. less heat loss / maintain body temperature / less energy loss / keep warm; <p>OR</p> <ol style="list-style-type: none"> 3. restrict movement / eq; 4. less <u>respiration</u> / less <u>energy</u> used; <p>OR</p> <ol style="list-style-type: none"> 5. more digestible food / food with more energy / food with more fat; 6. more energy absorbed; | | 4 |

Total 7 marks

| Question number | Answer | Notes | Marks |
|-----------------|--|----------------------------------|-------|
| 4 (a) | low in fat / eq; heart disease / blocks blood vessels / eq; high in protein / amino acids; growth / repair / eq; ignore muscles | | 2 |
| (b) | conserves snail / natural populations / less collected / eq; | | 1 |
| (c) | spider(s); | | 1 |
| (d) | calcium / phosphate; | allow if in list with other ions | 1 |
| (e) (i) | cannot digest/breakdown <u>cellulose</u> / <u>fibre</u> / <u>roughage</u> ; no absorption of <u>cellulose</u> / <u>fibre</u> / <u>roughage</u> ; lack enzyme / cellulase; lack symbiotic organisms; | ignore converse | max 2 |
| (ii) | 70; ; one for 2.8 in working | | 2 |

| | | | |
|-----|---|--|---|
| (f) | (more) (glucose) metabolism / (more) respiration; heat loss / need to maintain body temperature / keep warm / eq; more active / more movement; | ignore energy use / energy loss allow converse for snails allow converse for snails allow converse for snails | 2 |
| (g) | humans + (select) desired characteristics (for breeding) / eq; | allow human terms such as you / we / farmers | 1 |
| (h) | (no) bacteria / microorganism / fungi / pathogen / infection / disease / parasites / eq; | ignore germs | 1 |

TOTAL 13 MARKS