| Question number | Answer | Notes | Marks |
|---|---|---|---|
| 1 (a) (i) | 1. distribute food / nutrients / eq;<br><br>2. distribute oxygen;<br><br>3. even out temperature / distribute heat; | <br><br>2. gnore air<br><br>3. gnore maintain temperature constant | 2 |
| (ii) | 1. optimum / best / suitable for enzymes;<br><br>2. prevent denaturation / prevent change to active site; | <br><br>2. igno death of microbes | 2 |
| (iii) | insulin / antibiotics / enzymes / hormones / yeast / amino acids / clotting factors / gibberellin / eq; | reject ethanol / beer / biogas / yoghurt / medicine / drugs | 1 |
| (b) | 1. stop air supply / stop oxygen supply;<br><br>2. open pressure release valve / have exit pipe (for biogas) / eq; | 1. ig re reduce air supply / remove air filter | 2 |

**Total 7 marks**

| Question number | Answer | Notes | Marks |
|---|---|---|---|
| 2 (a) | 1. enzymes;<br>2. opti m (pH);<br>3. dena red;<br>4. tive site altered / eq;<br>5. ma tain production / affect production / eq; | Ignore destroyed | 3 max |
| (b) | 1. water jacket / cooling water / eq;<br>2. sulation / eq;<br>3. t perature sensor / temperature probe / temperature recorder / thermostat / eq; | Ignore thermometer | max 2 |
| (c) | 1. oxyg ;<br>2. a obic respiration / eq;<br>3. x / eq; | | max 2 |

| | | | |
|---|---|---|---|
| (d) | 1. sterilise / aseptic / kills microorganisms / eq;<br><br>2. ools to) water / condenses;<br><br>3. p vent competition from unwanted organisms / produce different product / eq;<br><br>4. p vent chemical contamination of product; | | 2 max |
| | | | Total 9 marks |