

**Multiple Choice Answers**

Q14: D

Q16: A

**Multiple Choice Answers**

Q15: D

Q22: B

**Multiple Choice Answers**

Q17: A

**Multiple Choice Answers**

Q16: D

Q17: C

**Multiple Choice Answers**

Q19: C

|          |                                                                                                                                        |
|----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 5(a)(i)  | bacteria / prokaryote(s) ;                                                                                                             |
| 5(a)(ii) | <i>any two from:</i><br>only use for bacterial infections / when essential / when necessary ;<br>use appropriate antibiotic ;<br>AVP ; |
| 5(b)(i)  | genus ;                                                                                                                                |
| 5(b)(ii) | fungus / fungi ;                                                                                                                       |
| 5(c)(i)  | insulin / mycoprotein / ethanol / (named) alcohol / carbon dioxide / amino acids /<br>hormones / proteins / factor VIII / AVP ;        |
| 5(c)(ii) | oxygen ;                                                                                                                               |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5(c)(iii) | <p><i>any five from:</i></p> <ol style="list-style-type: none"> <li>1 monitoring ;</li> <li>2 temperature ;</li> <li>3 water jacket / described / water bath ;</li> <li>4 pH ;</li> <li>5 carbon dioxide might reduce pH ;</li> <li>6 buffer / described ;</li> <li>7 keep, pH / temperature, at suitable value for enzyme activity ;</li> <li>8 (named) nutrient supply ;</li> <li>9 carbon dioxide / <del>waste</del> products, removal ;</li> <li>10 stirrer to equally (distributed), temperature / pH / nutrient concentration / oxygen concentration / microorganisms ;</li> <li>11 idea of regulating (gas) pressure ;</li> <li>12 vent or exhaust ;</li> <li>13 sealed to prevent contamination / AW ;</li> </ol> |
| 5(d)      | yeast ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**Multiple Choice Answers**

Q17: D