21. Biotechnology and genetic modification

21.1 Biotechnology and genetic modification

Paper 3 and 4

Marking Scheme

Q1.

(c)	make complex molecules ticked ; rapid reproduction rate ticked ;	**2**	**R** each additional tick

Q2.

(c)	*any two from:* rapid reproduction rate ; ability to make complex molecules ; AVP ;;	**2**	e.g. no ethical concerns / have plasmids

Q3.

(a)	*any three from:* (small so do) not need much space ; rapid reproduction rate / AW ; can make complex molecule(s) ; no ethical concerns over use ; *idea that* genetic code is universal ; they have plasmids ; *idea that* plasmids are used, as vectors / in genetic engineering ; simple requirements / AW, so, easy / cheap, to grow ; AVP ;	**3**	

Q4.

(c)(i)	*any two from:* (cut using) restriction enzyme ; to form sticky ends ; plasmid cut with same enzyme (as new gene) ; to form complementary (sticky) ends ;	**2**	

(c)(ii)	*any two from:* rapid rate of reproduction ; no ethical considerations ; share same genetic code as other organisms ; ability to make complex molecules ; AVP ; do not take up much space / cheap to maintain cultures	**2**	

Q5.

(a)	yeast ;	**1**	

(d)	biofuels ; wine / beer, making ; penicillin / antibiotic (production) ; AVP ;;	**2**	

Q6.

(d)	small / take up little space ; reproduce rapidly / easy to grow ; contain plasmids ; transformation described / genetic modification / inserting genes ; no ethical concerns ; same genetic code as other organisms ; same DNA ; can make complex molecules / AW ; AVP ;	**3**	