

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Mark Schemes

Q1.

- (a) A sequence of DNA (nucleotides) bases that codes for a polypeptide;
Ignore codes for a protein.
Accept 'codes for a functional RNA' or 'codes for rRNA/tRNAs' or
'codes for a sequence of amino acids/primary structure'

1

- (b) 1. Pre-mRNA (only) produced in eukaryote (cell);
2. Splicing only occurs in eukaryote (cell);
3. Introns removed in eukaryote (cell)

OR

Introns not present in prokaryote (cell);

2 max

- (c) 1. PNA is complementary to DNA

OR

PNA forms base pairs with DNA;

2. Preventing/reducing RNA polymerase activity/binding

OR

Prevents RNA nucleotides binding

OR

Reducing/stopping transcription;

2

- (d) 1. Releases/provides energy;
Reject 'produce energy'

2. (So) peptide bonds form between amino acids

OR

(So) amino acid joins to tRNA;

2

[7]

Q2.

- (a) 1. (Some bacteria have) alleles for resistance;
Reject reference to immunity only once
Accept gene for allele
Reject if antibiotics cause production of resistance gene/allele
2. (Exposure to) antibiotics is the selection pressure
OR
Non-resistant bacteria die
OR
Resistant bacteria survive/reproduce;
Reject reference to immunity only once
Accept strain for bacteria
3. More antibiotics used in hospital (compared with elsewhere)
OR
Patients have weakened immune systems
OR
(So) high frequency of resistance allele (in bacterial population);
Accept gene for allele
Ignore antibiotics prescribed when not needed OR antibiotic course is not finished
Ignore defence system, for immune system
Accept proportion/percentage for frequency

3

- (b) Maltose;
Reject maltase
Accept phonetic spelling eg
moltose/maltosse/maltoze/moltoes/maltoez

1

- (c) 1. Wash hands with soap
OR
Disinfect surfaces;
Ignore sterilise hands OR surfaces
Accept sanitise for disinfect
Accept antiseptic /antimicrobial/alcohol (wipes)
Accept a named type of disinfectant
2. Use sterile pipette/syringe (to transfer bacteria);
Reject loop
Accept use unopened pipette/syringe for sterile
3. (Remove bottle lid and) flame neck of bottle;

4. Lift lid of (agar) plate at an angle;
Accept lift lid slightly OR keep lid over plate
Ignore work quickly with lid off
5. Work close to upward air movement;
Reject air movements sterilise air
Accept convection current for air movement
6. Use sterile spreader;
Accept loop for spreader
Examples of sterilising technique eg, flame OR dip in alcohol and flame
OR dip in disinfectant and rinse (in sterile water)
7. Place pipette/spreader into disinfectant (immediately after use);
Accept a named type of disinfectant

3 max

(d) **For**

1. Resistant bacteria grow faster with trehalose;
Accept C. difficile/strain for bacteria
2. (So) resistant bacteria (likely to) increase in frequency in the population/people;
Accept C. difficile/strain for bacteria
Accept 'percentage/proportion' for 'frequency'
3. Resistant bacteria (likely to) outcompete non-resistant bacteria;
Accept C. difficile/strain for bacteria

Against

4. In laboratory not in people;
Accept C. difficile/strain for bacteria
5. Other disaccharides (in the diet) might affect bacteria;
Accept C. difficile/strain for bacteria
Accept carbohydrate OR polysaccharide OR sugar, for disaccharide
6. Other bacterial species (in the body) might affect bacteria;
7. No stats test to see if difference/increase is significant;
Accept 'is not due to chance' for 'is significant'
Ignore standard deviation/SD (as not a stats test)
Reject 'to see if results are significant'
8. No data for both resistant and non-resistant bacteria growing together;
9. No data for different concentrations of trehalose;

3 max

Max 2 if only 'For' or only 'Against' marks

[10]