Practice Question Set For A-Level
Subject : Biology
Paper-1 Topic: 2 Cells

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Mark Schemes

Q1.

(a) 69.3 cm^3 solvent, 29.7 cm^3 water, 1.0 cm^3 acid (box 2);

1

(b) 1. Temperature;

2. Agitation/mixing/stirring;

3. Source/age/type of blueberries;

4. Crushing of the blueberries;

5. Rinsing of the blueberries prior to mixing;

6. Concentration of ethanol/acid;
Do not accept pH.
Accept 'Filtering method'.

2 max

(c) 1. Higher absorbance indicates more anthocyanin

OR

Higher absorbance indicates more membrane damage/permeability

OR

(**G** not zero because) some anthocyanin released when blueberries are crushed

OR

(**G** not zero because) some membrane damage when blueberries are crushed;
For 'anthocyanin' accept 'pigment'.
A direct comparative statement is not needed, can be taken from the answer as a whole.
Accept 'most' for 'more'.

2. More membrane damage/permeability results in more anthocyanin release
Accept 'most' for 'more'.

3. (**E** and **F** greater than water because) phospholipids dissolve in ethanol;

4. (**E** greater than **F** because) acid denatures membrane proteins;
Accept description of denaturation in terms of change in tertiary

Downloaded from www.merit-minds.com

structure or breaking of hydrogen/ionic bonds.

4

(d) 1. Use known concentration of blueberry juice/extract

OR

Use known concentration of anthocyanin/pigment (solution)

OR

Use known concentration of (extraction) solvent to be added to blueberries;

2. Prepare dilution series;

Accept descriptions and 'serial dilutions'

Accept dilution series in terms of pigment or solvent.

3. Compare (results) with colour standards to give score/value/concentration;

For 'colour standards' accept 'dilutions'.

3

[10]

Downloaded from www.merit-minds.com

Q2.

(a) 1. Hydrogen bonds (between DNA bases) break;

Ignore DNA helicase.

Reject hydrolysing hydrogen bonds.

2. (Only) one DNA strand acts as a template;

3. (Free) RNA nucleotides align by complementary base pairing;

For 'align by complementary base pairing', accept 'align to complementary bases' or 'align by base pairing'.

4. (In RNA) Uracil base pairs with adenine (on DNA)

OR

(In RNA) Uracil is used in place of thymine;

Do not credit use of letters alone for bases.

5. RNA polymerase joins (adjacent RNA) nucleotides;

Reject suggestions that RNA polymerase forms hydrogen bonds or joins complementary bases.

6. (By) phosphodiester bonds (between adjacent nucleotides);

7. Pre-mRNA is spliced (to form mRNA)

OR

Introns are removed (to form mRNA);

5 max

(b) 1. (mRNA attaches) to ribosomes

OR

(mRNA attaches) to rough endoplasmic reticulum;

2. (tRNA) anticodons (bind to) complementary (mRNA) codons;

3. tRNA brings a specific amino acid;

4. Amino acids join by peptide bonds;

5. (Amino acids join together) with the use of ATP;

6. tRNA released (after amino acid joined to polypeptide);

7. The ribosome moves along the mRNA to form the polypeptide;

6 max

(c) (Definition of gene mutation)

1. Change in the base/nucleotide (sequence of chromosomes/DNA);

For 4 marks at least one mark must be scored in each section of the answer.

Accept named mutation for 'change'.

2. Results in the formation of new <u>allele;</u>

Downloaded from www.merit-minds.com

(Has no effect because)

3. Genetic code is degenerate (so amino acid sequence may not change);

OR

Mutation is in an intron (so amino acid sequence may not change);

Accept description of 'degenerate', eg some amino acids have more than one triplet/codon.

4. Does change amino acid but no effect on tertiary structure;

5. (New allele) is recessive so does not influence phenotype;

(Has positive effect because)

6. Results in change in polypeptide that positively changes the properties (of the protein)

OR

Results in change in polypeptide that positively changes a named protein;

For 'polypeptide' accept 'amino acid sequence' or 'protein'.

7. May result in increased reproductive success

OR

May result in increased survival (chances);

4 max

[15]

Downloaded from www.merit-minds.com