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

Mark Schemes

Q1.

(a) 1. (Hb) loads/associates/binds oxygen in the lungs;

2. At high partial pressure of oxygen;

3. Binding of an oxygen (molecule to Hb) makes binding of another oxygen (molecule) easier;

4. (Oxygen transported as) oxyhaemoglobin in red blood cells;

5. (Hb) unloads/dissociates oxygen in the (respiring) cells/tissues;

6. At low partial pressure of oxygen

OR

At high partial pressure of carbon dioxide;

Accept pO_2 for partial pressure of oxygen.

Accept pCO_2 for partial pressure of carbon dioxide.

5 max

(b) 1. (mRNA attaches) to ribosomes

OR

(mRNA attaches) to rough endoplasmic reticulum;

Full name required for RER.

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

3. tRNA brings a specific amino acid;

Accept amino acid joined to tRNA using ATP.

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;

5 max

[10]

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Q2.

(a) After first meiotic division – **B**;

After second meiotic division – **E**;

2

(b) (Similarities)

1. (Both populations) have (variation due to) independent segregation/assortment (of chromosomes/chromatids);

2. (Both populations) have (variation due to) random fertilisation (of gametes);

3. Both (populations) have (further) mutations;

(Difference)

4. Crossing over causes variation in non-mutant only;

Comparison can be implied

***Max 2** for similarities*

3 max

[5]

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Q3.

(a) Similarities

1. Polymers of nucleotides;
   Accept 'chain' for polymer

2. (Nucleotide has) pentose, (nitrogen-containing organic) base and a phosphate (group);
   Accept in correct context
   'ribose/deoxyribose' for pentose

3. Cytosine, guanine and adenine (as bases);

4. Have phosphodiester bonds;

Differences

5. Deoxyribose v ribose;

6. Thymine v uracil;

7. Long v short;
   Accept DNA longer
   Ignore 'large' and 'small'

8. Double helix/stranded v single stranded;

6 max

(b) Similarities

1. Double membrane;

2. Both contain (circular) DNA;

3. Both contain ribosomes;
   Ignore numbers in front of ribosomes

Differences

4. Thylakoids/lamellae/grana v cristae;

5. Stroma v matrix;

6. Pigments v no pigments;
   Accept 'chlorophyll v no chlorophyll'

7. Starch grains v no starch grains;
   Max 3 marks for differences

4 max

[10]

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