Practice Question Set For A-Level
Subject : Biology
Paper-1 Topic: 3 Organism and substance exchange

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

(a)
1. permeable capillary wall / membrane;
2. single cell thick / thin walls, reduces diffusion distance;
3. flattened (endothelial) cells, reduces diffusion distance;
4. fenestrations, allows large molecules through;
5. small diameter / narrow, gives a large surface area to volume / short diffusion distance;
6. narrow lumen, reduces flow rate giving more time for diffusion;
7. red blood cells in contact with wall / pass singly, gives short diffusion distance / more time for diffusion;

(allow 1 mark for 2 features with no explanation)

4 max

(b)
1. (hydrostatic) pressure of blood high at arterial end;
2. fluid / water / soluble molecules pass out (*reject plasma*);
3. proteins / large molecules remain;
4. this lowers the water potential / water potential becomes more negative;
5. water moves back into venous end of capillary (*reject tissue fluid*) by osmosis / diffusion;
6. lymph system collects any excess tissue fluid which returns to blood / circulatory system / link with vena cava / returns tissue fluid to vein;

6

[10]

QWC 1

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Q2.

(a) (i) curve to right of curve for pH 7.4;

1

(ii) more oxygen unloaded / given up / affinity decreased / reduced saturation;
oxyhaemoglobin dissociates at higher oxygen concentration / partial pressure /
more oxygen unloaded at the same ppO_2;

2

(b) (aerobic) respiration will produce carbon dioxide / anaerobic respiration produces lactate;
carbon dioxide dissolves in blood forming acid;
increases hydrogen ion concentration;

3

[6]

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Q3.

(a) less muscle / thin(ner) wall in left atrium;

1

(b) (i) pressure of left ventricle higher than pressure of left atrium;

1

(ii) closing of the semi-lunar valves / pocket valves;
pressure in artery / aorta is higher than ventricle;

2

[4]

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