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| **A-level Biology – Year 11 transition work**  **Exchange**  **Quick questions**  1. A small organism; (1)  2. Three suitable examples, including: oxygen, waste products, nutrients; (3)  3. The alveoli; (1)  4. Decrease; (1)  5. The intercostal muscles; diaphragm muscles; (2)  **Total 8 marks**  **Examination questions**  **Q1.**  (a)     (**P**) Trachea / windpipe and (**Q**) bronchus;  *For* ***P*** *or* ***Q****, accept (ring of) cartilage (i.e. not for both)*  *Accept bronchi*  *Reject bronchioles*  *Ignore reference to left or right lung*  **1**  (b)     1.      Increases volume (in lungs / thorax);  *Context must be lungs / thorax*  *Ignore space increases*  2.      Lowers pressure (in lungs / thorax);  *Accept lungs / chest expand*  *Ignore reference to ‘change in pressure’*  3.      Air (pushed) in by higher outside pressure / down pressure gradient;  *Ignore reference to ‘sucked in’*  **2 max**  **[3]**  **Q2.**  (a)     As size increases, ratio (of surface area to volume) decreases;  *Accept converse.*  *Comparison required, e.g., smaller organisms have a larger ratio*  **1**  (b)     Two marks for correct answer in range of 1.75 to 1.76032;;  *Accept for 1 mark, incorrect answer using radius 0.87 / 0.88 / 0.880 / 0.8802 / 0.88015;*  ***OR***  *Accept for 1 mark, incorrect answer with correct rearranged equation, e.g.,*  *Radius =*  ***OR***  *=*  ***OR***  *=*  ***OR***  *r2 = surface area ÷ 4 π*  ***OR***  *r2 = 9.73 ÷ 12.56*  ***OR***  *r2 = 0.77 / 0.774 / 0.775*  **2**  (c)     (Measures) small uptake / amount / quantity / volume / concentration / rate (of oxygen uptake);  **OR**  Avoids use of powers of ten / standard form / many decimal places;  *Ignore weight / accuracy*  **1**  (d)     More accurate / less error (in measuring mass);  **OR**  Causes less distress / damage to animal (to measure mass);  **OR**  Easier / quicker (to find mass) **because** irregular shapes;  **OR**  Fewer measurements / calculations;  *Ignore references to* ***human*** *error*  *Accept converse if reference made to volume*  *Reject if comparison is made with surface area.*  **1**  (e)     (Oxygen used in) respiration, **which** provides energy / ATP;  **OR**  (Oxygen is used in) respiration, **which** is a metabolic process / chemical reaction;  *Reject produces energy*  *Reject references to anaerobic respiration*  **1**  (f)      1.      No information about egg;  2.      So cannot compare all stages (in Table 2);  *Idea of comparing all three stages needed*  3.      No statistical information / test / t-test / comparison of standard deviations;  **OR**  No measure of significant differences;  *Reject statements that “results” are not significant*  *Reject references to chi squared or correlation coefficient*  **3**  **[9]**  **Q3.**  (a)     1.      Contraction of internal intercostal muscles;  2.      Relaxation of diaphragm muscles / of external intercostal muscles;  3.      Causes decrease in volume of chest / thoracic cavity;  4.      Air pushed down pressure gradient.  **4**  (b)     19(%);  **1**  (c)     1.      Muscle walls of bronchi / bronchioles contract;  2.      Walls of bronchi / bronchioles secrete more mucus;  3.      Diameter of airways reduced;  4.      (Therefore) flow of air reduced.  **4**  **[9]** |