

Gas Exchange

Mark Scheme 2

| | |
|-------------------|---|
| Level | IGCSE(9-1) |
| Subject | Biology |
| Exam Board | Edexcel IGCSE |
| Module | Double Award (Paper 1B) |
| Topic | Structure and Functions in Living Organisms |
| Sub-Topic | Gas Exchange |
| Booklet | Mark Scheme 2 |

Time Allowed: 40 minutes

Score: /33

Percentage: /100

Grade Boundaries:

| | | | | | | | | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| >90% | 80% | 70% | 60% | 50% | 40% | 30% | 20% | 10% |

| Question number | Answer | Notes | Marks |
|-----------------|---|--|-------|
| 1 (a) (i) | maintain/control/balance water/salt/concentration (of blood / of body / of cells) / eq; | ignore detects | 1 |
| (ii) | lungs / skin / liver; | | 1 |
| (b) (i) | water / urea / salt / mineral / named ion / eq; | ignore nitrogen / phosphorus not filtered out of blood =2 marks for MP4 and MP 2 ignore absorbed alone | 1 |
| (ii) | 1. large molecules / too big (to pass through); 2. (ultra) filtration / pressure / eq; 3. glomerulus / Bowman's capsule; 4. stay in blood / eq; | | 3 |
| (iii) | 1. respiration / eq; 2. nergy / ATP; 3. (selective) reabsorption / back into blood / eq; 4. <u>proximal</u> convoluted tubule / <u>first</u> coiled tubule / eq; 5. active transport / active uptake; | | 3 |

(Total for Question = 9 marks)

| Question number | Answer | Notes | Marks |
|-----------------|--|---|-----------|
| 2 (a) (i) | lungs; | | 1 |
| (ii) | diaphragm; | allow phonetic spelling | 1 |
| (iii) | trachea / windpipe; | eg dyaphragm | 1 |
| (iv) | bronchus / bronchi; | ignore bronchioles / ignore right and left | 1 |
| (b) | balloons inflate / air into balloons / eq; <u>volume</u> (in model) increases / more space (in model) / eq; <u>pressure</u> decreases / eq; | ignore vacuum ignore area | 3 |
| (c) | (no) ribs / ribcage; (no) (intercostal) muscles; (no) pleural membranes; (no) movement (of chest) / up and out / expansion; | allow converse | 2 |
| (d) | 1 rest <u>and</u> exercise / range of exercise / jog and run / eq; 2 (how) count breaths / how many breaths / amount of breaths / volume / eq; 3 for time / seconds / minutes / eq; 4 quantification of exercise / jog for 5 minutes / do 10 press ups; 5 repeat (for reliability); | 1 allow if implied 2 ignore measure breathing - need method 3 is measure rate mark not exercise quantified 5 allow average | 4 |
| | | Total | 13 |

| Question number | Answer | Notes | Marks |
|-----------------|---|---|----------|
| 3 (a) | right; atrium <u>and</u> ventricle; | allow plural of atria and ventricles | 2 |
| (b) (i) | X same <u>and</u> Y up; | | 1 |
| (ii) | right and left side separate / septum / aorta connected to the left side / no water in LHS / eq; | | 1 |
| | | Total | 4 |

| Question number | Answer | Notes | Marks | | | | | | | | | | |
|------------------|---|---|-------|------------------|------|----------|----------|---------|------------|--------|--|--|---|
| 4 (a) (i) | <table border="1"> <thead> <tr> <th>Structure</th> <th>Organ</th> </tr> </thead> <tbody> <tr> <td>Spongy mesophyll</td> <td>leaf</td> </tr> <tr> <td>Alveolus</td> <td>lung(s);</td> </tr> <tr> <td>Nephron</td> <td>kidney(s);</td> </tr> <tr> <td>Villus</td> <td><u>small</u> intestine / duodenum / ileum;</td> </tr> </tbody> </table> | Structure | Organ | Spongy mesophyll | leaf | Alveolus | lung(s); | Nephron | kidney(s); | Villus | <u>small</u> intestine / duodenum / ileum; | | 3 |
| Structure | Organ | | | | | | | | | | | | |
| Spongy mesophyll | leaf | | | | | | | | | | | | |
| Alveolus | lung(s); | | | | | | | | | | | | |
| Nephron | kidney(s); | | | | | | | | | | | | |
| Villus | <u>small</u> intestine / duodenum / ileum; | | | | | | | | | | | | |
| (b) (| <p>ment of molecules/particles/gases/named molecule;</p> <p>high conc. to low conc. / down concentration gradient / eq;</p> <p>passive / eq;</p> | <p>ignore <u>substances</u></p> <p>allow along concentration gradient</p> | Max 2 | | | | | | | | | | |
| (c) | <p>ultrafiltration / pressure; glomerulus / Bowman's capsule / renal capsule;</p> | <p>ignore filtered alone</p> | 2 | | | | | | | | | | |