

Mark Scheme (Results) January 2011

GCE O

O Level Biology (7040) Paper 01

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January 2011

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7040/01 O-LEVEL BIOLOGY MARK SCHEME - JANUARY 2011

| Question number | Answer | Marks |
|-----------------|---|-------|
| 1 (a) | X diaphragm; Y intercostal (muscles); | 2 |
| (b) | contracts / eq; moves down / flattens / eq; increase in volume; decrease in pressure; | 4 |
| (c) | breathing (rate) increases / eq; increased depth; (more) oxygen; remove carbon dioxide / lactic acid; respiration / energy; | 3 |

Total 9 marks

| Question number | Answer | Marks |
|-----------------|--|--|
| 2 (a) (i) | C H O N (S); (only) | 1 |
| (ii) | enzymes / new cells / protoplasm / (tissue) growth / eq; | 1 |
| (iii) | Biuret / eq; (CuSO ₄ + NaOH) purple / eq; | 2 |
| (iv) | Kwashiorkor / lack of growth / oedema / failure to thrive /eq; | 1 |
| (b) | no need for boat / fuel / nets / eq; idea of guaranteed harvest / eq; can select fish type / age / size / eq; doesn't deplete fish stocks / extinction / eq; Ignore ref to cost / free from disease | 2 max |
| (c) | release waste / urea / faeces / eq; bacterial / algal / growth / eutrophication / eq; lack of oxygen / eq; respiration; escape of hormones / antibiotics / insecticides / eq; affect other fish; attract predators; affect food chain / eq; spread disease; affect food chain; Ignore affect ecosystem | 4 max One for effect one for detail |

Total 11 marks

| Question number | Answer | Marks |
|-----------------|---|-------|
| 3 (a) | P = aorta / eq; Q = coronary artery; | 2 |
| (b) (i) | anaerobic (respiration); | 1 |
| (ii) | lactic (acid); | 1 |
| (iii) | cholesterol / fat; narrows / eq; Ignore block blood clot / eq; | Max 2 |
| (c) (i) | mitosis; | 1 |
| (ii) | less risk of rejection / does not match / different genes / different blood group / eq; allow converse antigens; antibodies; | Max 2 |

Total 9 marks

| Question number | Answer | Marks |
|-----------------|-------------|-------|
| 4 | Table below | 7 |

| Group | Features | One example |
|----------|--|-----------------------------------|
| Plants | multicellular; carry out photosynthesis / chloroplasts; have cell walls / eq; cannot move / eq; 2 max | Broad Bean |
| animals; | Multicellular Can usually move Do not have cell walls | human / rat / fruit fly / eq; |
| fungi; | Feed on dead decaying organisms Do not carry out photosynthesis Extracellular digestion | yeast / Mucor / mushroom / eq; |
| Viruses | Very small Can reproduce only in other cells | HIV / TMV / eq; |

| Question number | Accept | Marks |
|-----------------|--|-------|
| 5 | excretion; nephrons; high / eq; protein; glucose / amino acids / salts / eq; reabsorption; osmoregulation; homeostasis; ADH; | 9 |

Total 9 marks

| Question number | Answer | Marks |
|-----------------|--|-------------------|
| 6 (a) | A = urethra ; B = bladder; C = sperm duct / vas deferens; | 3 |
| (b) | semen; urine; | 2 Either order |
| (c) (i) | make/produce sperm / stores sperm / eq; male hormone / testosterone / secondary sexual characteristics; | 2 |
| (ii) | lower body temperature / eq; Ignore constant | 1 |
| (d) | birth (canal) / vagina wide for baby / urethra too narrow / eq; Ignore ref to menstruation | 1 |

Total 9 marks

| Question number | Answer | Marks |
|-----------------|--|-------|
| 7 (a) (i) | chlorophyll ; absorb light / photosynthesis; | 2 |
| (ii) | amino acid / proteins; DNA / eq; new cells / new tissue / growth / eq; | 2 Max |
| (b) | active transport; <u>root hair cells</u> ; against concentration gradient / low to high / eq; energy / ATP; respiration; passive absorption / ion exchange / mass flow / diffusion / eq; | 4 Max |
| (c) | water leaves (roots) / plants cannot take in water / eq ; osmosis; dilute / high water potential to concentrated / low water potential / eq; plant wilts / lack of turgor / flaccid / plasmolysis / eq; lack growth / eq; | 4 max |

Total 12 marks

| Question number | Answer | Marks |
|-----------------|---|-------------------|
| 8 (a) (i) | both alleles same / same alleles / one kind of allele / DD / dd / eq; | 1 |
| (ii) | DD; Dd; | 2 Either order |
| (b) (i) | Dd and Dd; DD and Dd and Dd and dd; | 2 Any order |
| (ii) | 25% / eq; | 1 |
| (iii) | 3:1; | 1 |
| (c) | phenylalanine; | 1 |

Total 8 marks

| Question number | Answer | Marks |
|-----------------|---|-------|
| 9 (a) (i) | to educate / make people aware of dangers / eq; so they could stop / give up / discourage / eq; | 2 |
| (ii) | passive smoking / eq; tar; cancer / carcinogens; bronchitis; emphysema / eq; heart disease / cardiovascular disease / blood pressure / eq; ref to carbon monoxide / haemoglobin / oxygen carriage / eq; | 4 |
| (iii) | nicotine; addictive / habit forming / eq; | 2 |
| (b) | less haemoglobin / carboxyhaemoglobin / eq; less oxygen; less respiration / metabolism / energy / ATP; | 2 |

Total 10 marks

| Question number | Answer | Marks |
|-----------------|--|-------|
| 10 (a) | A evaporation; B transpiration; C precipitation / rain / raining / snow / snowing; | 3 |
| (b) | water vapour to water / gas to liquid; rain; | 2 |
| (c) | transport / solvent / eq; medium for chemical reactions / eq; gas exchange; cooling / eq; lubricant; | 2 max |
| (d) | swells; split seed coat/testa; cell elongation; enzymes; hydrolysis / digestion / breakdown / eq; starch to maltose / eq; | 3 max |

Total 10 marks

| Question number | Answer | Marks |
|-----------------|--|-------|
| 11 (a) (i) | respiration / fermentation; carbon dioxide; | 2 |
| (ii) | B warmer than A; enzyme / chemical reactions / yeast activity / eq; ref to (kinetic) energy; | 2 |
| (b) | no glucose; Ignore no respiration | 1 |
| (c) | no change / same as C / does not inflate / eq; | 1 |

Total 6 marks

TOTAL FOR PAPER: 100 MARKS

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