



This exam has been split into **three** sections.

Below details the types of questions and marks available for each section. Please allow time for each section accordingly.

**Section A** is made up of **36** marks and includes **8** short answer and medium answer questions.

**Section B** is made up of **24** marks and includes **7** short answer and medium answer questions.

**Section C** is made up of **20** marks and includes **2** short answer and medium answer questions and **1** extended response question.

## Section A

- 1 a) Identify **two** characteristics of mammals. (2 marks)

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- b) Give **one** example of a characteristic that is an exception in some mammals and give **one** example of a species with this characteristic. (2 marks)

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- 2 State **three** causes of induced mutations. (3 marks)

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- 3 Identify **two** processes which take place during the metaphase stage of mitosis. (2 marks)

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- 4 Identify **one** of the enzymes involved in transcription and explain its role within the process of DNA replication. (3 marks)

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## Section B

9 State **three** chemical factors that affect rates of reaction. (3 marks)

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10 Identify the type of bond that will be formed between group 1 and group 7 of the periodic table. (1 mark)

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11 Explain **two** effects denaturation has on enzyme activity. (4 marks)

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- 15 A vet has recommended that the abrasions on a rabbit's foot are rinsed in a 2M salt water solution to assist healing. Instructions are given to the veterinary nurse to make up the solution.

Using the periodic table in Appendix 1, calculate the amount of sodium chloride (NaCl) that the veterinary nurse would need to add to 1 litre of water to make a 2M solution to 1.d.p.

Show your workings.

(4 marks)

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## Section C

16 Identify and describe **two** techniques of medicine administration.

(4 marks)

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17 An adult Labrador weighs 27kg. Using the correct formulae below calculate

RER (over 5kg) = (30 x bodyweight in kg) + 70kcal

RER (under 5kg) = (60 x bodyweight in kg)

BMR= $M^{0.75}$  - where M is the mass in kg

a) the resting energy requirements of the Labrador. Show your workings.

(3 marks)

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b) the basal metabolic rate of the Labrador. Show your workings.

(1 mark)

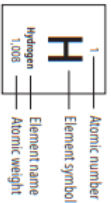
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# PERIODIC TABLE OF THE ELEMENTS

1 <b>H</b> Hydrogen 1.008																	2 <b>He</b> Helium 4.003	
3 <b>Li</b> Lithium 6.941	4 <b>Be</b> Beryllium 9.012																	10 <b>Ne</b> Neon 20.180
11 <b>Na</b> Sodium 22.990	12 <b>Mg</b> Magnesium 24.305																	18 <b>Ar</b> Argon 39.948
19 <b>K</b> Potassium 39.098	20 <b>Ca</b> Calcium 40.078	21 <b>Sc</b> Scandium 44.956	22 <b>Ti</b> Titanium 47.867	23 <b>V</b> Vanadium 50.942	24 <b>Cr</b> Chromium 51.996	25 <b>Mn</b> Manganese 54.938	26 <b>Fe</b> Iron 55.845	27 <b>Co</b> Cobalt 58.933	28 <b>Ni</b> Nickel 58.693	29 <b>Cu</b> Copper 63.546	30 <b>Zn</b> Zinc 65.390	31 <b>Al</b> Aluminum 26.982	32 <b>Ge</b> Germanium 72.640	33 <b>As</b> Arsenic 74.922	34 <b>Se</b> Selenium 78.960	35 <b>Br</b> Bromine 79.904	36 <b>Kr</b> Krypton 83.800	
37 <b>Rb</b> Rubidium 85.468	38 <b>Sr</b> Strontium 87.620	39 <b>Y</b> Yttrium 88.906	40 <b>Zr</b> Zirconium 91.224	41 <b>Nb</b> Niobium 92.906	42 <b>Mo</b> Molybdenum 95.938	43 <b>Tc</b> Technetium 98.000	44 <b>Ru</b> Ruthenium 101.070	45 <b>Rh</b> Rhodium 102.905	46 <b>Pd</b> Palladium 106.420	47 <b>Ag</b> Silver 107.868	48 <b>Cd</b> Cadmium 112.411	49 <b>In</b> Indium 114.818	50 <b>Sn</b> Tin 118.710	51 <b>Sb</b> Antimony 121.760	52 <b>Te</b> Tellurium 127.600	53 <b>I</b> Iodine 126.905	54 <b>Xe</b> Xenon 131.293	
55 <b>Cs</b> Cesium 132.905	56 <b>Ba</b> Barium 137.327	57-71 Lanthanides	72 <b>Hf</b> Hafnium 178.490	73 <b>Ta</b> Tantalum 180.948	74 <b>W</b> Tungsten 183.848	75 <b>Re</b> Rhenium 186.207	76 <b>Os</b> Osmium 190.230	77 <b>Ir</b> Iridium 192.222	78 <b>Pt</b> Platinum 195.078	79 <b>Au</b> Gold 196.967	80 <b>Hg</b> Mercury 200.590	81 <b>Tl</b> Thallium 204.383	82 <b>Pb</b> Lead 207.200	83 <b>Bi</b> Bismuth 208.980	84 <b>Po</b> Polonium 209.000	85 <b>At</b> Astatine 210.000	86 <b>Rn</b> Radon 222.000	
87 <b>Fr</b> Francium 223.000	88 <b>Ra</b> Radium 226.000	89-103 Actinides	104 <b>Rf</b> Rutherfordium 261.000	105 <b>Db</b> Dubnium 262.000	106 <b>Sg</b> Seaborgium 266.000	107 <b>Bh</b> Bohrium 264.000	108 <b>Hs</b> Hassium 277.000	109 <b>Mt</b> Meitnerium 278.000	110 <b>Ds</b> Darmstadtium 281.000	111 <b>Rg</b> Roentgenium 282.000	112 <b>Cn</b> Copernicium 285.000	113 <b>Nh</b> Nihonium 286.000	114 <b>Fl</b> Flerovium 289.000	115 <b>Mc</b> Moscovium 290.000	116 <b>Lv</b> Livermorium 293.000	117 <b>Ts</b> Tennessine 294.000	118 <b>Og</b> Oganesson 294.000	
57 <b>La</b> Lanthanum 138.905	58 <b>Ce</b> Cerium 140.116	59 <b>Pr</b> Praseodymium 140.908	60 <b>Nd</b> Neodymium 144.240	61 <b>Pm</b> Promethium 145.000	62 <b>Sm</b> Samarium 150.360	63 <b>Eu</b> Europium 151.964	64 <b>Gd</b> Gadolinium 157.250	65 <b>Tb</b> Terbium 158.925	66 <b>Dy</b> Dysprosium 162.500	67 <b>Ho</b> Holmium 164.930	68 <b>Er</b> Erbium 167.259	69 <b>Tm</b> Thulium 168.934	70 <b>Yb</b> Ytterbium 173.040	71 <b>Lu</b> Lutetium 174.967				
89 <b>Ac</b> Actinium 227.000	90 <b>Th</b> Thorium 232.038	91 <b>Pa</b> Protactinium 231.036	92 <b>U</b> Uranium 238.029	93 <b>Np</b> Neptunium 237.000	94 <b>Pu</b> Plutonium 244.000	95 <b>Am</b> Americium 243.000	96 <b>Cm</b> Curium 247.000	97 <b>Bk</b> Berkelium 247.000	98 <b>Cf</b> Californium 251.000	99 <b>Es</b> Einsteinium 252.000	100 <b>Fm</b> Fermium 257.000	101 <b>Md</b> Mendelevium 258.000	102 <b>No</b> Nobelium 259.000	103 <b>Lr</b> Lawrencium 262.000				



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