

T Level Technical Qualification in Animal Care and Management (Level 3)

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You should have the following for this examination

- a pen with blue or black ink
- a calculator

General instructions

- The marks for questions are shown in brackets.
- This examination contains 18 questions. Answer all questions.
- Answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Cross through any work you do not want to be marked.
- Show all your workings.

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)
	b) Give one example of a characteristic that is an exception in some mammals and give example of a species with this characteristic.	one (2 marks)
2	State three causes of induced mutations.	(3 marks)
3	Identify two processes which take place during the metaphase stage of mitosis.	(2 marks)
4	Identify one of the enzymes involved in transcription and explain its role within the proces replication.	s of DNA (3 marks)

5	Explain three differences between the structure of animal DNA and RNA.	(6 marks)
6	The dominant creeper gene produces abnormally short legs in chickens. The recessive lethal gene.	allele is a
	Explain two implications to the F1 generation in terms of the lethal gene, if two heterozy parent chickens were mated.	gous (4 marks)

These traits are independent				and black	(nair (B)	is dominant to	wnite nair (b).
A male mouse of genoty	pe Ttbb is	crossed	l with a fe	male mo	ouse of g	enotype ttBb.	
Using the information pro Punnett square, giving th	ovided, ide ne predicte	entify the ed genoty	gametes	s using th phenotyp	ne FOIL r pic ratios	nethod and cor from the cross	nplete the (8 marks)
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The Volcanoes National Park in Rwanda is home to a small population of approximately 350 Mountain Gorillas. Their population is being threatened by the increasing number of tourists and from illegal hunting and poaching from neighbouring countries, Burundi and Congo. The impact of which is shown in the table below.

	2018	2019	2020	2021	2022
Number of African tourists	130,000	180,000	80,000	50,000	200,000
Number of tourists from other continents	1,500,000	1,800,000	500,000	0	2,000,000
Number of Gorilla deaths due to zoonotic disease	24	32	56	9	22
Number of Gorillas hunted/poa ched	7	9	12	8	5

the Mountain Gorilla.	
	(6 marks)
_	

Describe the mitigations that the Volcanoes National Park could take to help prevent extinction of

Section B

10	State three chemical factors that affect rates of reaction.	(3 marks)		
10	Identify the type of bond that will be formed between group 1 and group 7 of the periodic	c table. (1 mark)		
11	Explain two effects denaturation has on enzyme activity.	(4 marks)		

12	Explain one effect of each of the following on the establishment of chemical equilibrium.	
	a) Temperature.	(2 marks)
	b) Catalysts.	(2 marks)
13	Summarise three of the steps that occur during the chemical reaction of glycolysis.	(6 marks)
14	One of the gases used in a laboratory for Bunsen burners is Propane (C ₃ H ₈). When burn Oxygen (O ₂) it produces Carbon Dioxide (CO ₂) and Water (H ₂ O).	t with
	Use these chemical formulae to work out the balanced equation for the combustion of Pr	opane. (2 marks)

J	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)

Section C

Identify and describe two techniques of medicine administration.										
An adult Labrador weighs 27kg. Using the correct formulae below calculate										
RER (over 5kg) = $(30 \text{ x bodyweight in kg}) + 70\text{kcal}$ RER (under 5kg) = $(60 \text{ x bodyweight in kg})$ BMR=M ^{0.75} where M is the mass in kg										
a) the resting energy requirements of the Labrador. Show your workings.	(3 marks)									
b) the basal metabolic rate of the Labrador. Show your workings.	(1 mark)									
	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.									

18	A kitten presenting with signs associated with cat flu has been brought into the veterinary practice and is sitting in a mixed waiting room. They are called into a cat only consultation room and the diagnosis of cat flu is confirmed. The kitten is admitted, and hospitalised in the isolation wards and treatment of intravenous fluids, anti-inflammatories and antibiotics is commenced. After five days of treatment, the kitten is discharged back to its owner.
	Discuss the role of the veterinary team in the diagnosis of the disease, management and treatment of the kitten when hospitalised and then returned to its owner.
	Evaluate the journey of the kitten through the veterinary practice and any impact this may have on the kitten's welfare. (12 marks)

End of Assessment

Appendix 1 – Periodic Table

		87 Francium 223,000	55 Cs Cesium 132,906	Rubidium 85,468	19 Potassium 39,098	Na Sodium 22.990	Lithium 6,941	Hydrogen 1,008	-
		88 Radium 226,000	56 Ba Barium 137,327	38 Str Strontium 87,620	20 Ca Calcium 40,078	Mg Magnesium 24,305	Be Beryllium 9,012	2	
Actinium	57 Lanthamum 138,906	89 - 103 Actinides	57 - 71 Lanthanides	Yttrium 88,906	21 SC Scandium 44,956	ω			
70 Thorium 232,038	58 Cerium 140,116	104 Rutherfordium 261,000	72 Hafinium 178,490	40 Zr Zirconium 91,224	22 Tetanium 47,867	•			ъ
Protactinium 231,036	59 Praseodymium 140,908	105 Dubnium 262,000	73 Tantalum 180,948	Nicobium 92,906	23 Vanadium 50,942	5 1			ER
92 Uranium 238,029	Neodymium 144,240	Seatongium 266,000	74 W Tungsten 180,948	Molybdenum 54,938	24 Chromium 51.996	6-			PERIODIC
Neptunium 237,000	Promethium	Bahrium 264,000	75 Re Rhenium 186,207	Technetium 98,000	25 Mang amese 54,938	7			
Putonium 244,000	5m Samarium 150,360	108 Hassium 277,000	76 05 Osmium 190,230	Ruthenium	26 Iron 55,845		Hydroger 1,008	-	TABLE
Am Americium 243,000	63 Europium 151,964	Meitnerium 278,000	77 Indium 192,217	Rhodium 102,906	27 Cobale 58,933	•	Element symbol Atomic weight	Atomic number	
Cm Curium 247,000	Gadolinium	DS Darmetadijum 281,000	78 Platinum 195,078	Pd Pladium 106,420	28 Nidael 58,693	10	symbol name weight	number	OF .
Berkelium	65 Tb Terbium 158,925	Roentgenium	79 Au Gold 196,967	Ag Silver 107,868	29 Cu Copper 63,546	=			표
Californium 251,000	Dyspresium	Cn Copernicium 285,000	80 Hg Mercury 200,590	Cadmium	Zinc 65,390	12			ELE
Einsteinium 252,000	Holmium 164,930	113 Nihonium 276,000	81 Thallium 204,383	114,818	Gallium 69,723	13 Al Aluminum 26,982	5 Boron 10,811	13	M
Fm Fermium 257,000	68 Ethium 167,259	114 Flerovium 289,000	82 Pb Lead 207,200	50 Sn	Germanium 72,640	51icon 28,086	Carbon 12,011	14	MENTS
Mendelevium 258,000	Tm Thulium 168,934	115 Mc Moscovium 290,000	83 Bismuth 208,990	Sb Antimony 121,760	33 AS Arsenik 74,922	15 Phosphorus 30,974	Nitrogen 14,007	15	S
Nobelium 259,000	70 Yb Ytterbium 173,040	116 LV Unermorium 293,000	Po Polonium 209,000	Tellurium 127,600	\$6elenium 78,960	16 Sulfur 32,065	0xygen 15,999	16	
Lawrencium 262,000	71 Lutetium 174,967	117 TS Tennessine 294,000	85 Actatine 210,000	53 lodine 126,905	35 Bromine 79,904	17 Chlorine 35,453	9 Fluorine 18,998	17	
		118 Og Oganesson 294,000	Rn 86	Xenon 131,293	36 Krypton 83,800	18 Argon 39,948	Neon 20,180	Heium 4,003	ಹ

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