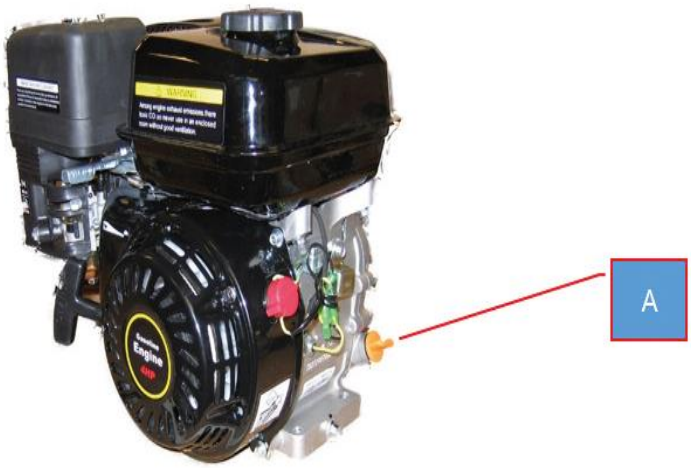
Qualification: 0173 - 501/001 Level 3 Technicals in Land and Wildlife – Theory Exam

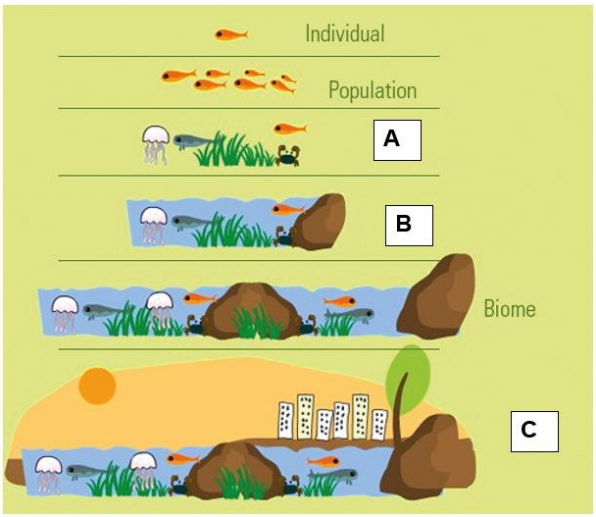
June 2018

1a Identify the part marked A in Figure 1.



Acceptable answer(s)	Guidance	Max mks
Dip stick/oil reservoir **(1)**		**1**

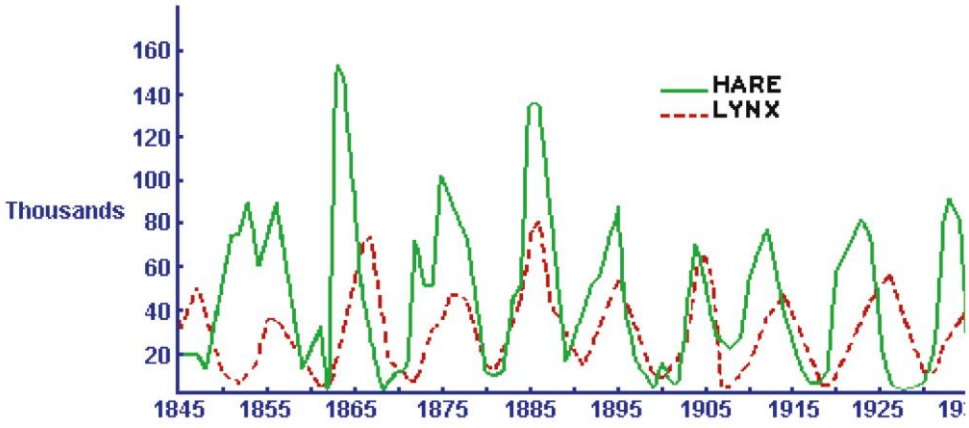
1b	Identify the component shown in Figure 2. 		
	Acceptable answer(s)	**Guidance**	**Max mks**
	3 point linkage **(1)**		1
1c	Give **two** reasons why it is important to inspect a machine before it is used.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for any of the following, up to a maximum of 2 marks: • To check the machine is safe for use **(1)** • To check parts for wear and tear **(1)** • To check machine can function correctly and is ready for use **(1)** • To follow industry best practice/health and safety **(1)**	*Accept and award marks for any other acceptable answer*	2
2a	State why it is good practice to wear a solid screen visor whilst strimming.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Visor protects the face from this debris/flying dog faeces/other biohazards when strimming **(1)**	*Accept and award marks for any other acceptable answer*	1

2b	Explain the potential dangers of using a quad bike on a hillside.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for any of the following, up to a maximum of 4 marks: • Stability issues • Limited payload • No roll over protection • Steering mechanism	*Accept and award marks for any other acceptable answer*	4
3	In ecology, what does 'fecundity' mean?		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Actual reproductive rate of an organism **or** population **(1)**	*Accept and award marks for any other acceptable answer.*	1
4a	Label the levels of organisation A, B and C in Figure 3.  		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for each of the following, up to a maximum of 3 marks: **A –** Community **B –** Ecosystem **C -** Biosphere		3

4b State **three** causes of fluctuation in global wildlife population.

Acceptable answer(s)	Guidance	Max mks
1 mark for any of the following, up to a maximum of 3 marks: • Seasonality • Emerging diseases • Climate change • Habitat destruction • Influence of man	*Accept and award marks for any other acceptable answer.*	3

5 The diagram in Figure 4 shows a classic population cycle between a predator and its prey.



Explain why the peak in lynx population usually occurs after the peak in hare population.

Acceptable answer(s)	Guidance	Max mks
1 mark for any of the following, up to a maximum of 4 marks: This is due to delayed density dependent response **(1)** where Lynx are responding to high numbers of hares by improved breeding rates **(1)** but as breeding takes 1 full year **(1)** this isn't seen in the numbers of Lynx until the year after the hares have peaked. **(1)**	*Accept and award marks for any other acceptable answer.*	4

6	Explain the impact on an ecosystem of introducing a non-native species.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Points to include the following (1 mark for each up to a maximum of 4 marks): • This can lead to displacing/outcompeting native species • Predation of native species • The non-native species could spread disease • Cause physical damage to habitat/species eg. Trees • Hybridisation with native species	*Accept and award marks for any other acceptable answer.*	4
7a	Some species in the UK have undergone population changes in the last 100 years. a) For **one** named species, explain the reasons for its decline.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for naming the species and 2 marks for explaining the reasons: • Loss of suitable habitats **(1)** • Increased predation **(1)** • Persecution by man **(1)** • Competition with non-natives **(1)** • Habitat fragmentation **(1)** • Climate change **(1)** • Pollution **(1)** • Diseases **(1)** • Increased disturbance by man **(1)** **Any 2 of the above as appropriate to the species.**		3
7b	For the same species, explain how conservation strategies have led to its recovery.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Reasons for subsequent recovery: • Discussion of reversal of above reasons for decline **(1)** • Increased protection / legislation **(1)** • Reintroduction/rehabilitation projects **(1)** • Financial incentives for landowners eg stewardship scheme **(1)** • Biodiversity/Species Action Plans – targeted management **(1)**	*Accept and award marks for any other acceptable answer up to 3 marks.*	3

8a Name the tool shown in Figure 5.

Acceptable answer(s)	Guidance	Max mks
Fencing pliers **(1)**		1

8b Name **one** piece of PPE that should be worn whilst using a hand held post thumper/knocker.

Acceptable answer(s)	Guidance	Max mks
1 mark only for any of the following: • Steel toe capped boots • Helmet • gloves		1

8c A surfacing material costs £10 per m3. Calculate the total cost to surface an area of path which is 10 m x 4 m to a depth of 10 cm. You must show your working.

Acceptable answer(s)	Guidance	Max mks
• 10 cm = 0.1m **(1 mark for conversion)** • 10x4x0.1=4 m^3 **(1 mark for area)** • 4x10=£40 **(1 mark for total cost)**		3

8d	Explain two factors that need to be considered when selecting materials to construct a path.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for point and another for explanation (Any of these points up to 4 marks) • Dimensions to ensure it can take expected traffic **(2)** • Longevity to understand how long it will last in the environment **(2)** • Drainage – what is required? Surface or piped **(2)** • Contamination of environment and How why **(2)** • Surface finish and why its required **(2)** • Access to site for materials and equipment **(2)** • Cost and why **(2)**		4
9a	A site needs to be cleared of low shrubby vegetation. a) Identify **one** suitable method for this activity.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Any 1 of the following: • Brushcutter / chainsaw / clearing saw **(1)** • Tractor operated Mulcher / Flail **(1)** • Burning **(1)**		1
9b	Give **one** advantage and **one** disadvantage of the method identified in 9a).		
	Acceptable answer(s)	**Guidance**	**Max mks**

	1 mark for advantage and 1 mark for disadvantage:
	• Brushcutter / chainsaw / clearing saw
	  ○ Advantage – good for areas especially requiring selective cutting **(1)**
	  ○ Disadvantage – not suitable for large areas **(1)** or leave material on site **(1)**
	• Tractor operated Mulcher / Flail
	  ○ Advantage – good for larger areas to cut **(1)**
	  ○ Disadvantage – non-selective **(1)** or leave material on site **(1)**
	• Burning
	  ○ Advantage –Good way of removing old heather/gorse and any accumulated litter **(1)**
		Any other advantages or disadvantages, up to 2 marks	2

	○ Disadvantage – risk of burning other vegetation eg mosses and not to ignite underlying peat. **(1)** or weather/seasonal dependent **(1)**		
10	According to the Control of Vibration at Work Regulations 2005, explain what should be checked on a hand held petrol engine machine before use.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for each point below (up to 3 marks): • How long you could use it for. • Condition of the anti-vibration mountings • Blade undamaged and balanced • Nuts / bolts and other fixings are secure • Warning stickers • Maintenance records		3
11	Define the terms biotic and abiotic, and describe their relationship in an ecosystem.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	1 mark for any of the following, up to a maximum of 3 marks: Biotic the living components of an ecosystem – plant/animal/fish/insect **(1)** Abiotic are non-living components of an ecosystem – rocks/soil/water/chemical compounds **(1)** Relationships / Interaction = sunlight/plants, soil chemicals/plants, **(1)**	*Accept and award marks for any other acceptable answer.*	3
12	A landowner wishes to create a small woodland on a piece of existing grassland. Discuss the factors that will need to be considered and implemented for the woodland to be successfully established.		
	Acceptable answer(s)	**Guidance**	**Max mks**
	Band 1: 1-4 Marks A basic discussion of a limited range of factors to be considered when planning the planting of trees. This is to include consideration to species, the time of year and limited knowledge of protection. **Band 2 : 5-8 Marks**	**Indicative content** • Objective • Source of trees – native / local provenance / species / size / number / spacing • Time of year for planting • Site conditions – soil, climate	12

	A good discussion of a wide range of factors to be considered when planning the planting of trees. Consideration has been given to the overall objectives, species choice, methodology and follow up treatment. **Band 3: 9-12 Marks** An excellent discussion of an extensive range of factors to be considered when planning the planting of trees. Clear and detailed consideration has been given to the overall objectives, species choice, methodology and follow up treatment. Environmental/legal considerations and protection has been discussed.	• Removal of competitive vegetation – chemical, mulching, mechanical • Protection from grazers – fencing – height and specification dependent on predominant grazers eg rabbit, hares, deer, stock • Protection from deer damage – tubes – height and specification dependent on grazers eg Fallow or Muntjac • Follow-up treatment – weed control, beating-up, fence repairs • Ground preparation • Vole damage • Diseases • Machinery available	