



General Certificate of Education

20XX

Agriculture and Land Use

Unit 2 Animals on the Land

DRAFT

Unit 2 Animals on the Land

Time 1 hour 15 mins

Answer all questions from Section A and two questions from Section B

SECTION A please answer all questions in this section

1 (a) Apart from freedom from disease and abnormal behaviour, name **three** other basic welfare needs of farm animals.

1. Freedom from [1]

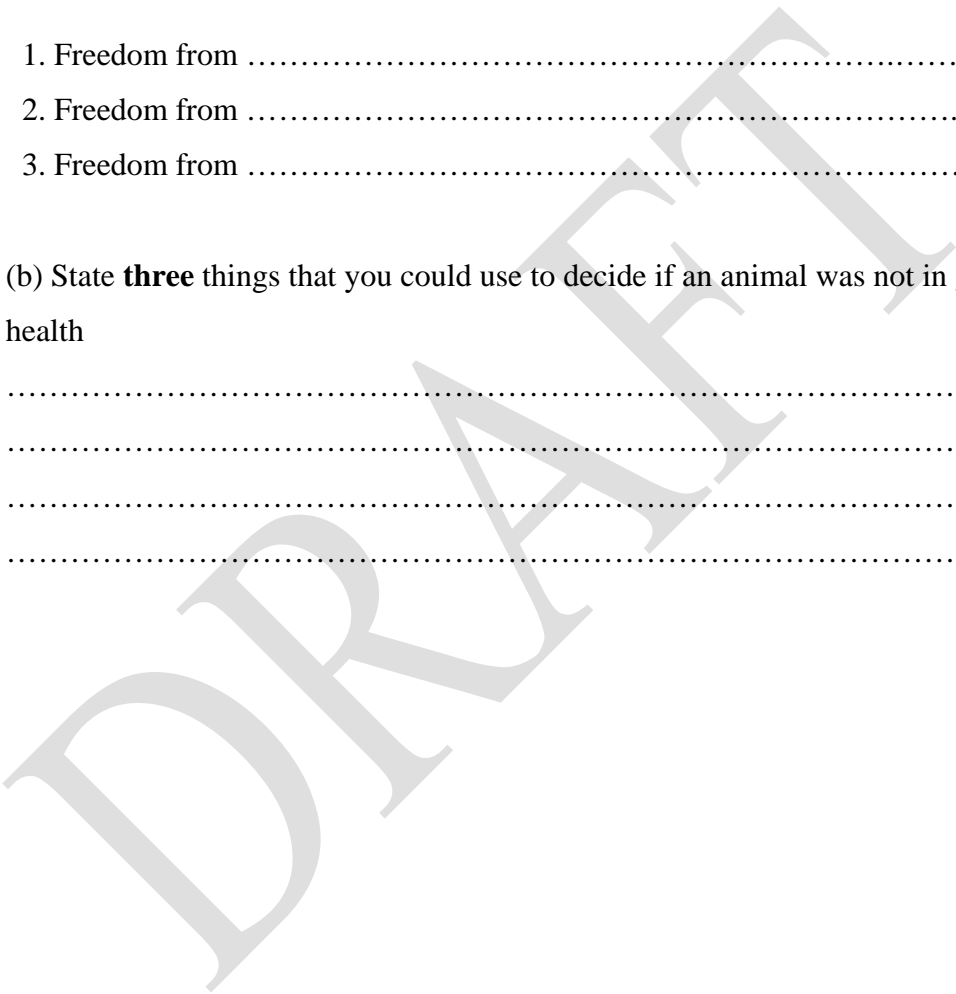
2. Freedom from [1]

3. Freedom from [1]

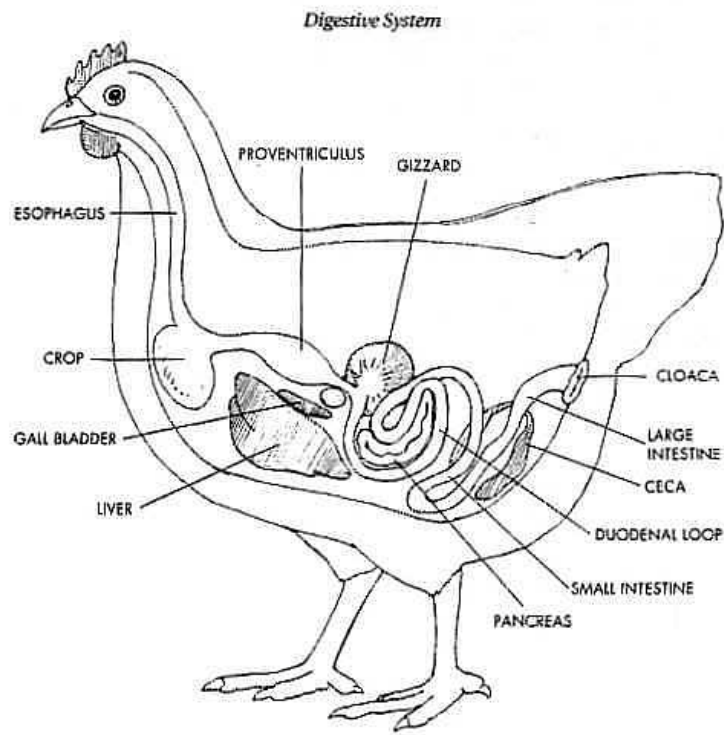
(b) State **three** things that you could use to decide if an animal was not in good health

.....
.....
.....
..... [3]

[6]



2 Fig 2.1 below shows an avian digestive tract.



Chicken Health Handbook
www.poultryhelp.com/impactedcrop

Fig. 2.1

(a) Write down the names of **two** farmed species that have this type of digestive tract.

1.
2.

[2]

(b) Describe **one** similarity and **one** difference between the avian and the ruminant digestive tract.

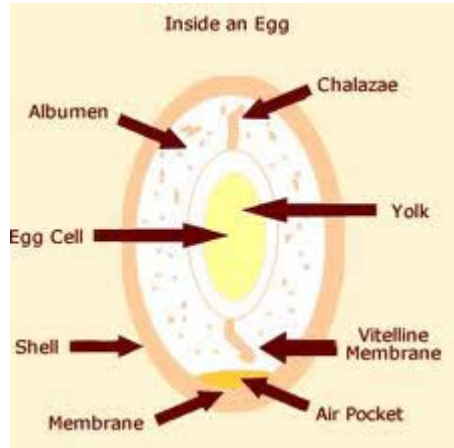
Similarity

.....
 [1]

Difference

.....
 [1]

(c)



www.animalcorner.co.uk/.../chicken_eggs.html

Fig 2.1

Fig 2.1 above shows a fertilised chicken egg.

Identify the parts marked X, Y and Z

- X [1]
- Y [1]
- Z [1]

(d) Complete the following paragraph by inserting the correct missing words.

A chicken's life begins once an egg is fertilised. It will develop into a chick over a period of _____ days until it hatches. Adult chickens start laying eggs when they are approximately _____ months old. A chicken will lay eggs without a rooster but they will not be _____ without him. [3]

(e) Write down **two** factors that a farmer must consider in deciding whether to produce chickens by an **intensive** or **extensive** production system.

Factor 1

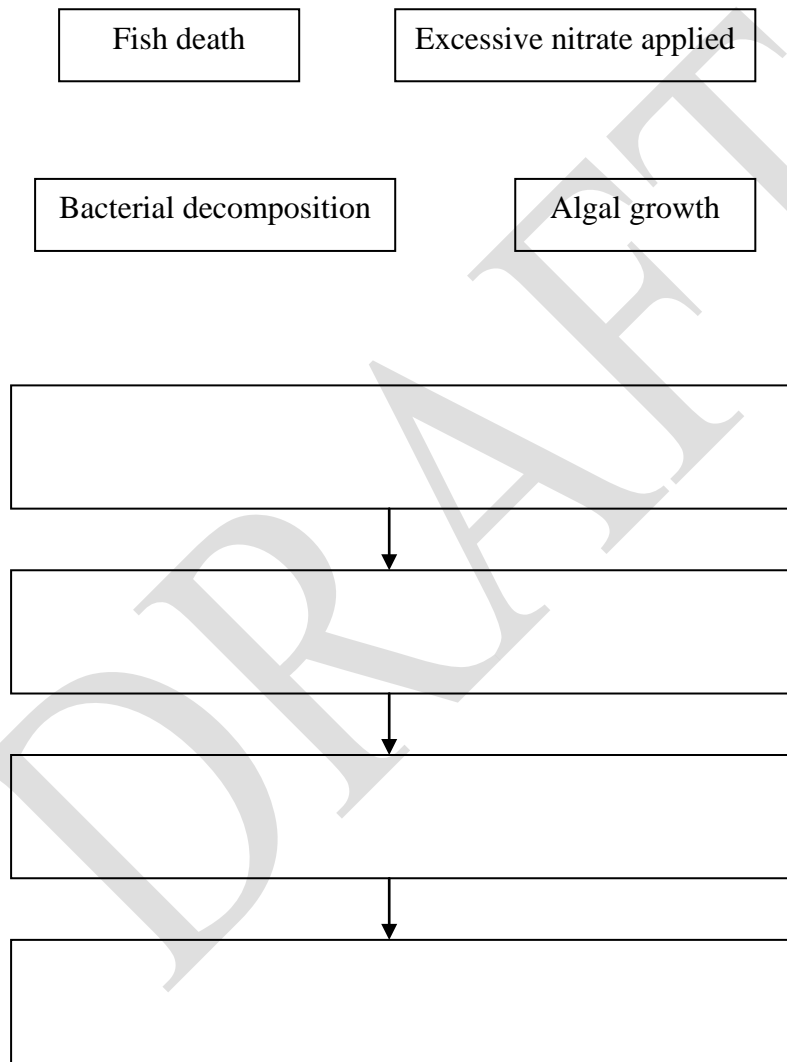
Factor 2 [2]

[12]

3 (a) Identify **two** potential sources of pollution associated with feeding silage to animals housed during the winter months.

1.
2.[2]

(b) Put the following statements below into the correct order to produce a flow chart that summarises what happens when large amounts of nitrates pass into Lough Neagh.



(c) What is the name given to the process described above?

..... [1]

(d) Write down **two** sources of nitrates from farming practices that have been found in Lough Neagh

1.
2. [2]

[9]

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4 (a) Write down **two** modern technology methods used to assist with the management of farm businesses and state **two** benefits of each method.

Method 1 [1]

Benefits

.....
.....
..... [2]

Method 2 [1]

Benefits

.....
.....
..... [2]

(b) Write down **one** advantage and **two** disadvantages of the **Single Farm Payment** system to farmers in Northern Ireland.

Advantage

.....
..... [1]

Disadvantage

.....
.....
..... [2]

[9]

5 (a) Write down **two** methods for land application of slurry by which farmers can utilise the nutrients effectively to boost grass growth and reduce the risk of water pollution.

Method 1

.....

Method 2

.....[2]

(b) The pictures below four invertebrate species whose presence can be used to assess levels of pollution in water. Place the name of each species in the boxes provided, the first one has been done for you.



A

www.visionarydigital.com/Lightpad_2.html

Species A =
Caddis fly larvae



B

www.nwnature.net/macros/wormshtml

Species B =



C

www.amentsoc.org/.../orders/exopterygota.html

Species C =



D

www.islandwood.org/.../macros/Mayfly_nymph.html

Species D =

[3]

- (c) Describe how electricity can be produced by from the anaerobic digestion of cattle slurry.

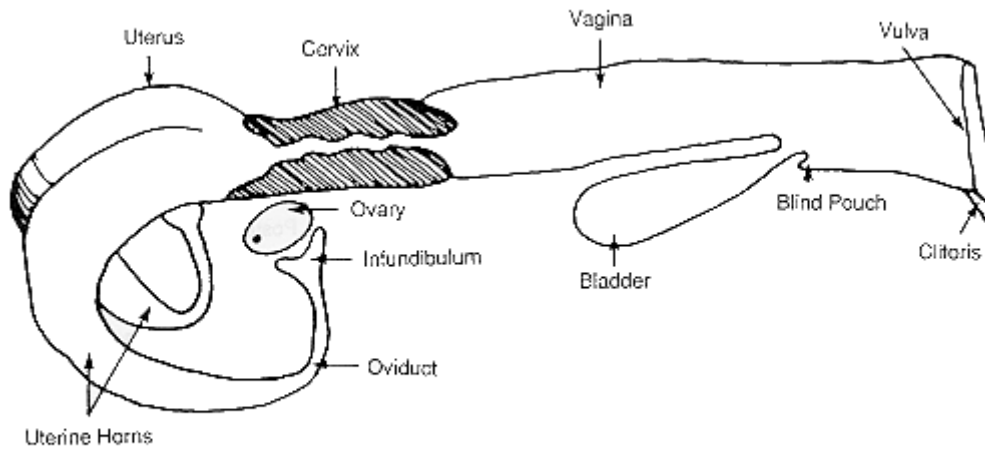
.....
.....
.....
..... [3]

[8]

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SECTION B Please answer two questions from this section

1 (a) Figure 1.1 shows the reproductive system of a female cow.



[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/beef4888](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/beef4888)

Fig 1.1

Identify the parts marked A, B, C

A [1]

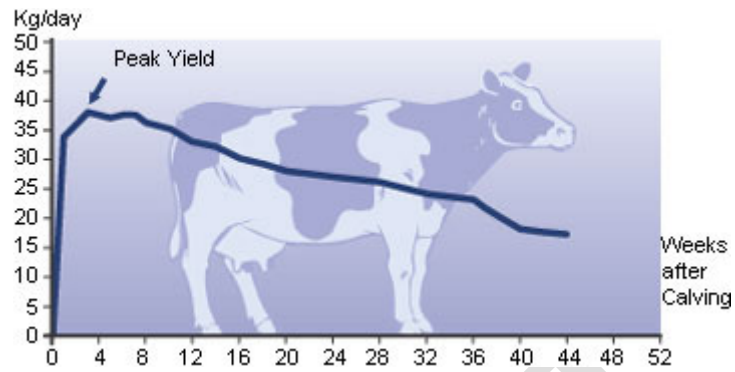
B [1]

C [1]

(b) What is the advantage of **colostrum** to a calf over ordinary milk whenever it is born?

.....
 [1]

(c) Fig 1.2 below shows a dairy cow **lactation curve**.
 Describe the stage of lactation at the parts of the curve marked X, Y Z



www.delaval.co.uk/Diary_Knowledge/EfficientDairyHerdMgmt/Management_of_The_Dairy_Cow.

- X [1]
 Y [1]
 Z [1]

[7]

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- 2 (a) During summer a high yielding lactating dairy cow on a production ration consumes fresh grass (18% dry matter) and concentrate meal (85% dry matter) each day.

Using these figures, complete the table below to calculate the total daily dry matter intake (DMI) of the cow.

Please show your working out.

Feed Type	Quantity (kg)	Dry matter %	DMI (kg)
Fresh grass	75kg	18%	
Concentrate meal	5kg		
		Total DMI (kg) =	

[4]

- (b) In the diagram below, use a line to match the stages of lactation with the correct Dry Matter Intake (DMI) for an average diary cow.

Stage of Lactation	DMI (kg)
Point of Calving	19 kg
Peak Milk Production	12 kg
End of Lactation	14 kg

[3]

[7]

Unit 2 Animals on the Land Mark Scheme

Section A

Q1(a)

- freedom from: **malnutrition** [1 mark]
freedom from: **fear / distress** [1 mark]
freedom from: **discomfort** [1 mark] [3 marks]

(b) any 3 from

- good vital signs [1]
interested in food [1]
appears bright and alert [1]
coat and skin supple and in good condition [1]
colour (salmon pink) of mucous membrane around the eye [1]
conditions of droppings/urine [1] [3 marks]

Total 6 marks

Q2

- a) Chicken or hen [1]; turkey [1] [2 marks]
- b) Similarity: e.g. both have a small intestine [1]
Difference: e.g. ruminant does not have a crop, or gizzard [1] [2 marks]
- c) Label the diagram
X = albumen [1]
Y = egg cell [1]
Z = vitelline membrane [1] [3 marks]
- d) **21 days**, [1]
6 months [1]
Fertilised [1] [3 marks]
- e) Factors include any of the following: environmental; welfare; costs; yield; breed. [2 marks]

Total 12 marks

Q3

- a) Sources could include: silage effluent [1]; slurry run off across land; [1]
dirty yard water [1] discarded milk [1] [2 marks]
- b) correct order is: nitrates; then algal growth; then bacterial decomposition; then fish death

1 mark for each element in the correct box
4 marks for all elements in the correct order [4marks]

c) process is eutropication: [1 mark]

d) sources are fertilisers [1]; slurry [1] [2 marks]

Total 9 marks

Q4

(a) Technology method: use of pedometers for cow heat detect[1] [1 mark]

Technology method: Auto ID [1] [1 mark]

Benefits

Indicative Content (pedometers)

Any 2 from

- improved accuracy of heat detection [1]
- time saved by farmer [1]
- computer connection so no need for paper records [1] [2 marks]

.....
Indicative Content (Auto ID)

Any 2 from

- control of automatic meal feeding [1]
- information available instantly via PDF or mobile [1]
- facilitates better traceability (for disease prevention) [1] [2 marks]

(b) Advantages, one from one payment per year, [1]one set of paperwork to complete [1]

Disadvantages two from

- less incentive to actively farm the land [1],
- overall net benefit to farmers, [1]
- longer term future of SFP not guaranteed [1]

[3 marks]

Total 9 marks

Q 5

(a) Any two from e.g.: slurry dribble bar [1]
slurry injection [1]
trailing shoe [1] [3 marks]

(b) Invertebrate indicator species

Species B = leech [1]

Species C = dragonfly larvae [1]

Species D = mayfly larvae [1] [3 marks]

- (c) Description to include the following points;
- slurry/manure stored in anaerobic tank [1]
 - methane gas is produced [1]
 - energy is used to generate electricity [1]

[3 marks]

Total 9 marks

Section B - Cows

Q1 a) one mark for each correct label

A = uterus [1]

B = vagina [1]

C = ovary [1]

[3 marks]

b) The cow colostrum contains antibodies which help the calf fight disease.[1]

[1 mark]

c) X is birth of calf [1]

Y is peak milk yield [1]

Z is drying off [1]

[3 marks]

Total 7 marks

Q2

(a)

Feed type	Quantity (kg)	Dry matter %	DMI (kg)
Fresh grass	75	18	13.5
Meal	5	85	4.25
		Total DMI(kg) =	17.75

Award 1 mark for each figure entered correctly.

[4 marks]

(b)

Point of calving ----- 14 kg

Peak Milk production ----19 kg

End of lactation -----12 kg

[3 marks]

Total 7 marks

Q3

Indicative content

Advantages: milk yields and productivity are better in intensive systems;

Disadvantages: all inputs and costs are generally higher in intensive systems; cows tend to have more health problems associated with time spent on concrete surfaces. Welfare is perceived to be poorer in intensive outdoor systems. Environmental problems may arise from storage and spreading of cattle slurry all year round.

Response	Mark
Candidates must use appropriate specialist terms throughout to explain fully (using 4 of the above points which must include one advantage) the advantages and disadvantages of the system. They use good spelling, punctuation and grammar and form and style are of a high standards	[5-6]
Candidates use some appropriate specialist terms to explain (using 3 of the above points which must include one advantage) the advantages and disadvantages of the system. They use satisfactory spelling, punctuation and grammar and form and style are of a satisfactory standard.	[3-4]
Candidates give some explanation (using 2 of the above points which must include one advantage) the benefits of the named technologies to the farmer/farm business. They use limited spelling, punctuation and grammar and they have made little use of specialist terms. The form and style are of a limited standard	[1-2]
Response not worthy of credit	[0]

Total 6 marks