

Pearson BTEC Level 3 Nationals Extended Diploma

Animal Management

Unit 1: Animal Breeding and Genetics

Part A

June 2018

Paper Reference

31644H

You do not need any other materials.

Instructions

- **Part A** contains material for the completion of the preparatory work for the set task.
- **Part A** is given to learners 2 weeks before Part B is scheduled. Learners are advised to spend no more than 6 hours on Part A.
- **Part A** must be given to learners on the specified date so that learners can prepare in the way directed.
- **Part A** is specific to each series and this material must only be issued to learners who have been entered to undertake the task in that series.
- **Part B** materials must be issued to learners for the supervised session.

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Instructions to Teachers/Tutors

This set task has a preparatory period. Part A sets out how learners should prepare for the completion of the task under supervised conditions.

Part A should be issued to learners **two** weeks prior to undertaking **Part B** of the assessment.

Learners should familiarise themselves with the specific context given in this Part A booklet.

Learners are expected to spend up to 6 hours in undertaking Part A.

Centres must issue this booklet at the appropriate time and advise learners of the timetabled sessions during which they can prepare. It is expected that scheduled lessons or other timetable slots will be used for some or all of the preparation.

Learners may prepare summary notes on the context. Learners may take up to four sides of notes of this type into the supervised assessment (Part B booklet). Other content is not permitted.

- Learners notes must be written in bullet form.
- No full sentences or extended essays are allowed.
- Learner's notes may contain information on generic principles arising from the scenario and the unit content.

Part B must be completed under supervision. The supervised assessment uses the Part B booklet. This is a task book.

The supervised assessment will take place in a timetabled session specified by Pearson.

Centres should schedule all learners at the same time or supervise cohorts to ensure there is no opportunity for collusion.

The set task is a formal external assessment and must be conducted with reference to the instructions in this task booklet and the Instructions for Conducting External Assessments (ICEA) document to ensure that the preparatory period is conducted correctly so that learners have completed their preparation validly and independently.

Teachers/tutors should note that:

- Learners should not be given any direct guidance or prepared materials
- Learners should not be given any support in writing or editing notes
- All work must be completed independently by the learner
- Learner notes will be retained securely by the centre after Part B and may be requested by Pearson if there is suspected malpractice.

Instructions for Learners

Read the set task information carefully.

In Part B you will be asked to carry out specific (written) activities using the information in this Part A booklet and your own research on this topic.

In your preparation for Part B using this Part A booklet you may prepare short notes to refer to when completing the set task. Your notes may be up to four sides and may be handwritten or typed and printed.

Your notes:

- must be written in bullet form
- must not contain full sentences or extended essays
- may contain information on generic principles arising from the scenario and the unit content.

You will complete Part B under supervised conditions.

You must work independently and should not share your work with other learners.

Your teacher may give guidance on when you can complete the preparation.

Your teacher cannot give you feedback during the preparation period.

Set Task Brief

You are required to carry out research into the scenario provided in the Set Task Information below. You should consider the following areas in relation to the scenario:

- the animal breeds and their breeding standards
- care plans and reproductive behaviours for those breeds.

You will be allowed a maximum of four sides of A4 of your individually prepared notes to support you during the supervised assessment. You are expected to spend approximately six hours conducting your research.

Part A: Set Task Information

John has recently bought a rundown smallholding on the outskirts of the town.

His intention is to develop the smallholding so he can host visits from primary school groups on weekdays and the general public at the weekend. The purpose will be to both demonstrate how food is produced and allow the children to interact with the animals. Along with this, John wants to sell the excess produce to the public.

He decides to stock poultry first, because he hopes he will be able to get a quick financial return from selling the eggs. He intends to start with a flock of 25, breeding from them to build up the number of hens laying eggs. John intends eventually to sell the excess meat to visitors.

You have been asked to advise John on the appropriateness of the following breeds for his situation, taking into account the need for both egg and meat production. He would also prefer a breed that can cope with the disturbance that is likely to result from the visitors he is hoping to attract.

The breeds he is considering are:

- Buff Orpingtons
- Silkies
- Indian Game
- Black Rocks.

Using the information above, you have been asked to advise John of the breeding strategies and management of these breeds. You must also advise John about the breeds that would be most suitable for his smallholding.

Write your name here

Surname					Other names				
Centre Number					Learner Registration Number				
Pearson BTEC Level 3 Nationals Extended Diploma									

Animal Management

Unit 1: Animal Breeding and Genetics

Part B

Window for supervised period: Monday 14 May 2018 – Friday 18 May 2018 Supervised hours: 2 hours	Paper Reference 31644H
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You do not need any other materials.	Total Marks
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Instructions

- You will need your research notes from **Part A** (maximum four A4 sides).
- **Part B** contains material for the completion of the set task under supervised conditions.
- **Part B** should be undertaken in 2 hours during the assessment period timetabled by Pearson.
- **Part B** is specific to each series and this material must only be issued to learners who have been entered to undertake the task in the relevant series.
- You are not required to submit your research notes.
- Use **black** ink or ball-point pen.
- Fill in the boxes at the top of this page with you name, centre number and learner registration number.
- Complete **all** activities.
- Answer the activities in the spaces provided
- *there may be more space than you need.*

Information

- The total mark for this paper is 80.
- The marks for **each** activity are shown in brackets
- *use this as a guide as to how much time to spend on each activity.*

Advice

- Read each activity carefully before you start to answer it.
- Try to answer every activity.
- Check your answers if you have time at the end.

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Instructions to Teachers/Tutors

This paper must be read in conjunction with the unit information in the specification and the BTEC Nationals Instructions for Conducting External Assessments (ICEA) document. See the Pearson website for details.

The set task should be carried out under supervised conditions.

Learners must complete the set task using this task and answer booklet.

During any break, materials must be kept securely.

All learner work must be completed independently and authenticated by the teacher/tutor before being submitted to Pearson.

Centres are free to arrange the supervised assessment period how they wish provided the two hours for producing final outcomes are under the level of supervision specified, and in accordance with the conduct procedures.

Learners must not bring anything into the supervised environment or take anything out without teacher/tutor approval.

Centres are responsible for putting in place appropriate checks to ensure that only permitted material is introduced into the supervised environment.

Maintaining security

- Supervised assessment areas must only be accessible to the individual learners and to named members of staff.
- Learners can only access their work under supervision.
- Any work learners produce under supervision must be kept secure.

Outcomes for submission

- A completed task booklet will need to be submitted by each learner.

Each learner must complete an authentication sheet. The prepared notes do not need to be submitted with the final outcomes to Pearson. Centres should keep the prepared notes securely as it may be requested by Pearson if there is suspected malpractice.

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Instructions for Learners

Read the set task information carefully.

You must plan your time accordingly and be prepared to submit all the required evidence by the date specified.

You will need to refer to any preparatory work from **Part A** to complete the set task in **Part B**.

You will complete this set task under supervision and your work will be kept securely during any breaks taken.

You must work independently throughout the supervised assessment period and should not share your work with other learners.

Outcomes for submission

You will need to submit this task booklet on completion of the supervised assessment period.

A fully completed authentication sheet must be completed; the prepared notes do not need to be submitted with the final outcomes to Pearson.

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Set Task

You must complete the activities in this task booklet.

You are required to have carried out research into the scenario provided in the Set Task Information below.

You should have considered the following areas in relation to the scenario:

- the animal breeds and their breeding standards
- care plans and reproductive behaviours for those breeds.

You will have six hours to prepare your research (up to four sides of A4). This will then be collected and retained by your teacher at the end of the session. This will be handed back when Part B commences to support you during the supervised assessment.

Set Task Information

John has recently bought a rundown smallholding on the outskirts of the town.

His intention is to develop the smallholding so he can host visits from primary school groups on weekdays and the general public at the weekend. The purpose will be to both demonstrate how food is produced and allow the children to interact with the animals. Along with this, John wants to sell the excess produce to the public.

He decides to stock poultry first, because he hopes he will be able to get a quick financial return from selling the eggs. He intends to start with a flock of 25, breeding from them to build up the number of hens laying eggs. John intends eventually to sell the excess meat to visitors.

You have been asked to advise John on the appropriateness of the following breeds for his situation, taking into account the need for both egg and meat production. He would also prefer a breed that can cope with the disturbance that is likely to result from the visitors he is hoping to attract.

The breeds he is considering are:

- Buff Orpingtons
- Silkies
- Indian Game
- Black Rocks.

Using the information above, you have been asked to advise John of the breeding strategies and management of these breeds. You must also advise John about the breeds that would be most suitable for his smallholding.

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Answer ALL questions. Write your answers in the spaces provided.

1 (a) (i) Give **two** factors that breeders have to consider when selecting breeding poultry.

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(ii) Explain why breeders cross two breeds to produce a hybrid such as a Black Rock.

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John's intention is to allow the hens to incubate the eggs themselves and raise the chicks on a free range system.

(b) Explain **two** conditions that John should consider so the hens incubate and raise their chicks successfully.

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John is ready to buy his poultry stock and is going to use your recommendations about the breeds he is considering.



Picture 1
A Buff Orpington



Picture 2
A Silkie





Picture 3

An Indian Game

(c) Assess and recommend how John should stock his smallholding with poultry. Use the notes and research you have done to help you with this.

(12)

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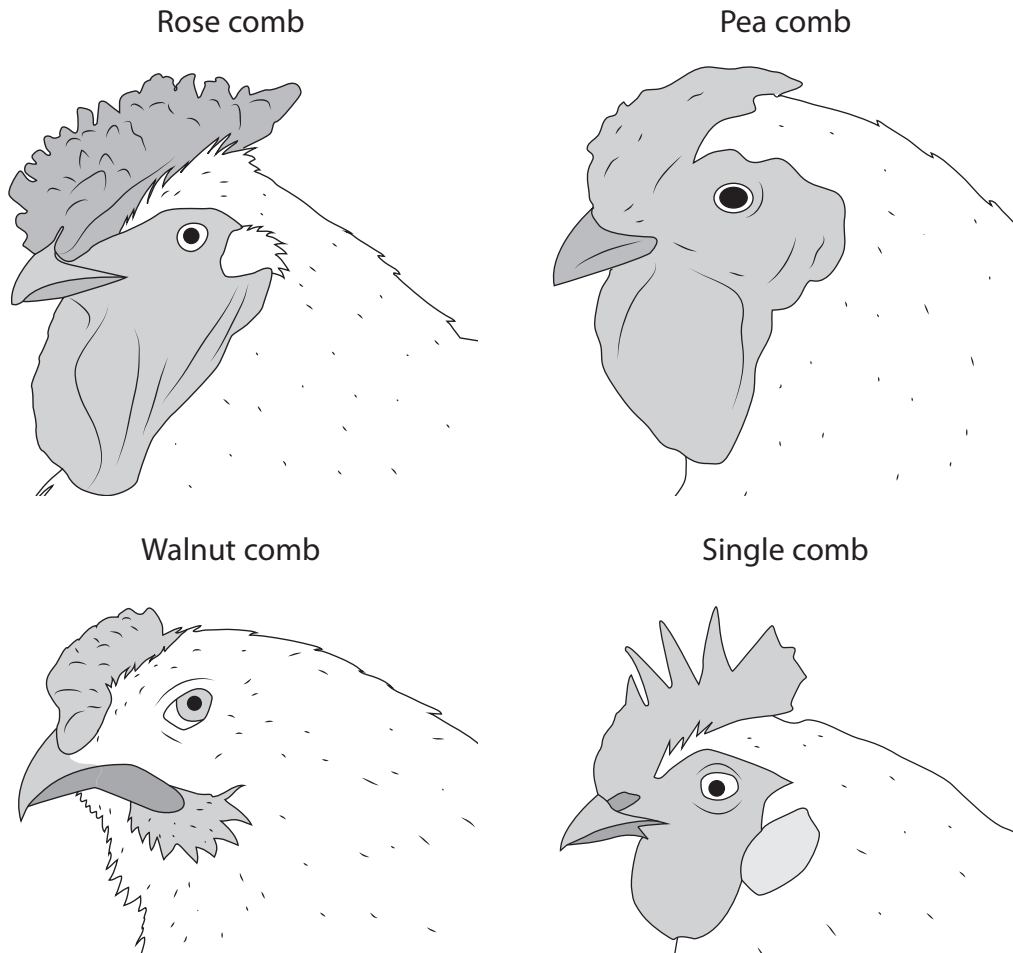
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(Total for Question 1 = 22 marks)



John visits his poultry supplier and he sees four different comb shapes. He investigates further and finds out they are called rose comb, pea comb, walnut comb and single comb.

This is how they look.



Comb shape is determined by two different genes.

The allele for a rose comb is R.

R is dominant and r is recessive.

The allele for pea comb is P, with P dominant and p recessive.

If a cockerel has:

- a dominant R and is homozygous for p, it has a rose comb
- a dominant P and is homozygous for r, then the comb will be pea shaped
- dominant alleles for both P and R, it will have a walnut comb
- only recessive alleles, it will have a single comb.

The breeder has crossed a walnut combed hen with a walnut combed cockerel. He knows they are heterozygous for both alleles.

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2 (a) Calculate the phenotypic probabilities using the dihybrid template.

(8)

		Female gametes				
Male gametes						

Phenotypic probability

If John only buys poultry that are closely related to each other, his stock may suffer from inbreeding depression.

(b) Explain **two** reasons why inbreeding depression may cause problems in a poultry flock.

(4)

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(c) Explain **three** ways of making sure that eggs in an incubator are hatched successfully.

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(Total for Question 2 = 18 marks)

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QUESTION 3 BEGINS ON THE NEXT PAGE.



John realises that it may be more profitable to sell some of the chickens he produces as breeding stock, rather than slaughter them for meat. To get the best prices, he wants to breed the highest quality birds he can.

3 (a) Explain **two** reasons why keeping records may help him produce high quality birds.

(4)

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(b) Describe **one** way that breeding animals' needs are supported by legislation.

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(c) Explain why identifying conception in breeding animals is important.

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(Total for Question 3 = 12 marks)

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Breeding programmes use genetic principles and manipulation to improve outcomes.

4 (a) Explain **two** stages in the process of genetic modification by insertion.

(4)

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(b) Describe **three** different types of mutation.

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(Total for Question 4 = 28 marks)

TOTAL FOR TASK = 80 MARKS

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