

Candidate Number.....

The Institute of Animal Technology



FELLOWSHIP EXAMINATION 2003

Section A - ANIMAL TECHNOLOGY

Morning, Tuesday 10th June

(TOTAL TIME: 3 HOURS)

Part I & Part II

Long Answer Questions

Part III

Short Answer Questions

Write your candidate number in the top right hand corner of this cover sheet

Read the instructions for each part carefully

Part I

Long Answer Questions

Attempt ONE of the two questions

Write your answer on the paper provided

Write on one side of the paper only

Write your candidate number in the top right hand corner and the question number in the top left-hand corner of every answer sheet

You are advised to spend one and a half hours on the question

Equal marks are available for each question. The approximate percentage of marks available for each section of the question is indicated

Credit will be given for suitable illustration

You must hand in all answer sheets at the end of the examination

Attempt ONE question only

1. Discuss the use of computers in the animal unit.

(100%)

2. Describe the ways in which the environment of laboratory animals may cause, or predispose them to, disease.

(100%)

End of Part I

Part II

Long Answer Questions

Attempt TWO of the four questions

Write your answers on the paper provided

*Start each new answer on a fresh sheet of paper
Write on one side of the paper only*

Write your candidate number in the top right hand corner and the question number in the top left hand corner of every answer sheet

You are advised to spend half an hour on each question

Equal marks are available for each question. The approximate percentage of marks available for each section of the question is indicated

Credit will be given for suitable illustration

You must hand in all answer sheets at the end of the examination

Attempt TWO questions

3. Briefly outline the factors to be considered when planning the disposal of soiled bedding from animal facilities.

(100%)

4. Discuss the nutritional management of a flock of breeding sheep during the course of a year.

(100%)

5. Describe the behaviour of the pigeon, the dog and the marmoset under the following headings:

a) Nest building

(20%)

b) Imprinting/bonding

(40%)

c) Protection of young

(20%)

d) Weaning

(20%)

6. What are the factors that influence the size of animal rooms?

(100%)

End of Part II

Part III

Short Answer Questions

Attempt ALL Questions

Write your answers in the spaces provided

Numbers in brackets indicate the marks available for each question

You are advised to spend half an hour on this part

Hand in this book, together with your answers to Parts I and II, at the end of the examination

Attempt all questions

1. Indicate with a tick (✓) the characteristics in the left-hand column which apply to the types of mice.

	Inbred	F1 hybrid of two inbred strains	Outbred
Homozygous			
Isogenic			
Phenotypic uniformity			
Vigorous offspring			
Relatively inexpensive			

(5)

2. Define minimal inbreeding.

.....

.....

(1)

In what circumstances would it be used?

.....

.....

(1)

3. List three signs that could indicate that an inbred colony has become genetically contaminated.

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.....

.....

(3)

4. Complete the following table relating to *Taenia taeniformis*:

Primary host	
Secondary host	
Target organ in secondary host	
Name of final stage in secondary host	
Method of transfer to primary host	
Method of transfer to secondary host	

(6)

5. Name the organism that causes Tyzzer's disease.

.....

(1)

Give a clinical sign of this disease in mice.

.....

(1)

6. List five roles of an Ethical Review Process.

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.....

.....

(5)

7. Briefly describe the area covered by each of the five training modules specified for those working under the Animals (Scientific Procedures) Act 1986.

Module 1

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Module 2

.....

Module 3

.....

Module 4

.....

Module 5

.....

(5)

8. Explain the following terms used by Russell and Birch and give one example of each:

Replacement:

.....

Example:

.....

.....

Reduction:

.....

Example:

.....

.....

Refinement:

.....

Example:

.....

.....

9. List three methods which could be used to detect early pregnancy in a cow.

.....

.....

.....

(3)

10. Complete the following table relating to chicken eggs.

Incubation period	
Temperature for incubation	
Relative humidity for incubation	
Day when eggs may be removed to a hatcher	
Temperature for hatching	
Relative humidity for hatching	

(6)

11. Give four methods for checking the efficacy of cage and bottle washing machines.

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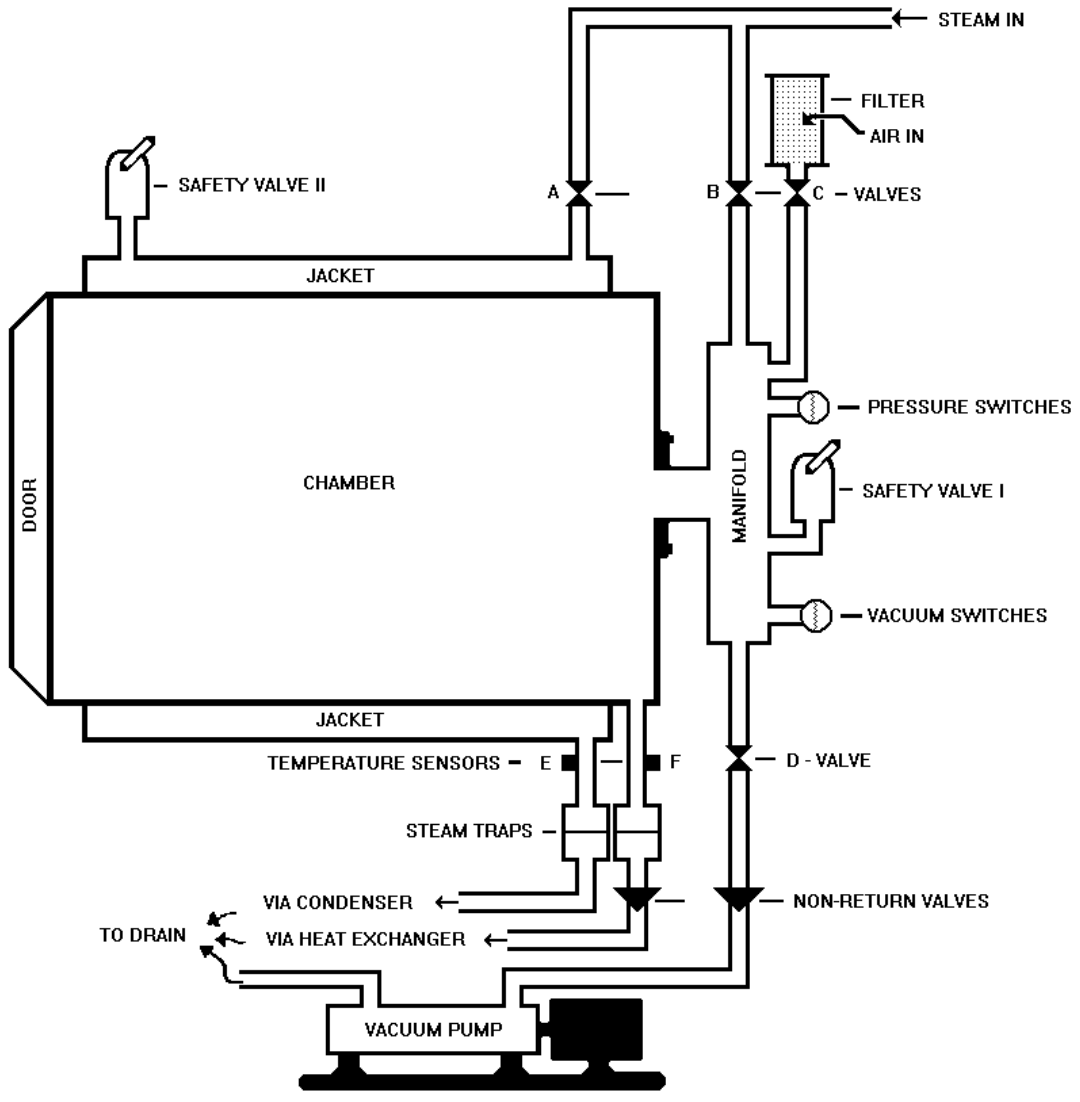
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(4)

12. The diagram below represents a variable time and temperature porous loads cycle autoclave.



Give three functions of the jacket.

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Give two reasons why the vacuum pump is needed.

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.....

(2)

Why would this autoclave not be suitable for processing waste from a unit housing infected animals?

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.....

(2)

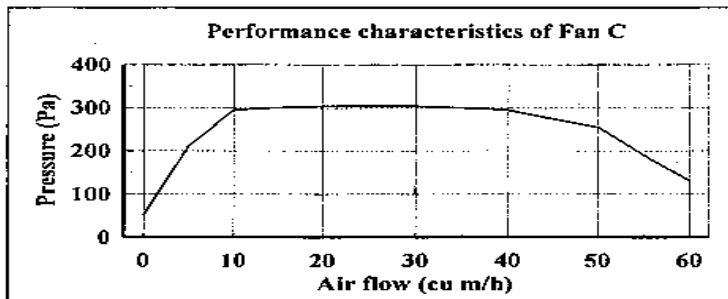
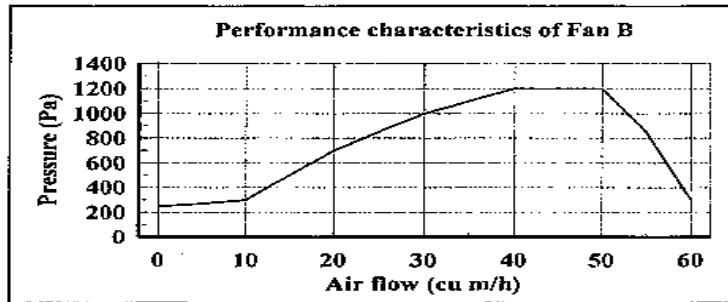
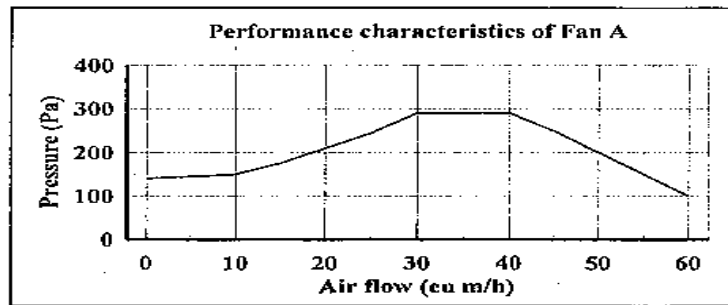
- 13.** A compound will be administered for 13 weeks to 20 rats in each of three groups at dosages of 2, 10 and 40 mg/kg/day. Assume the mean weight of the animals over the period will be 250g. What total weight of compound will be required?

(Show your workings)

.....
(5)

14. A single fan is required to supply air at a rate of 20 air changes per hour to four similar isolators connected in parallel. On some occasions only one or two isolators will be in use. The size of each isolator is 1m x 1m x 0.5m and the maximum pressure drop across each is 250 Pascals (Pa).

The following curves show the performance characteristics of fans A, B and C. Select which of these would be most suitable to supply the isolators.



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(1)

Give the reasons for your answer.

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.....
.....
(4)

15. Each m^3 of air entering an air conditioning system is known to be carrying 1,250,000 dust particles of $5\mu\text{m}$ diameter. How many $5\mu\text{m}$ dust particles per m^3 would you expect to find in the air after it had passed through:

(Show your workings for each part of the question)

i) a filter of 95% efficiency at $5\mu\text{m}$?

..... (1)

ii) a second filter of the same efficiency?

..... (1)

End of Part III