

Diploma in Veterinary Public Health (Meat Hygiene)

Please view the general documents to obtain copies of:

The stages of enrolment information.

- B1:** Guidance Notes for candidates on general requirements.
- B3:** General Guidance Notes on preparation for a Dissertation.
- E1:** Application form E1 - for enrolment and initial approval of experience.
- H:** Role of Advisers to Certificate Candidates.

The following papers are attached:

- B2:** Specific requirements for the Diplomas.
- C:** Syllabus and Commentary for the Diplomas.
- D:** Reading List.
- E:** Application forms E1, E.2
E.2 - for final approval of experience and for permission to submit an entry to the examination
- F:** List of Advisers.

A copy of the most recent Examination Question Paper is enclosed for your information.

April 2007

**THE ROYAL COLLEGE OF VETERINARY SURGEONS
SPECIALISATION AND FURTHER EDUCATION**

THE DIPLOMA IN VETERINARY PUBLIC HEALTH (MEAT HYGIENE)

SPECIFIC GUIDANCE NOTES FOR CANDIDATES

[These notes must be read in conjunction with the B1 General Guidance Notes to Candidates]

MEMBERSHIP OF THE ROYAL COLLEGE OF VETERINARY SURGEONS

1. It is a requirement of the Veterinary Public Health (Meat Hygiene) and State Veterinary Medicine Board that ALL Candidates entering for the Diploma in Veterinary Public Health (Meat Hygiene) are Members of the Royal College of Veterinary Surgeons (MRCVS).

SPECIFIC EXPERIENCE

Approved Centre Route

2. There is no approved centre route for the Diploma in Veterinary Public Health (Meat Hygiene).

Approved Practice Route*

3. Candidates following the approved practice route will not be permitted to enter for the examination until they have been Members of the College or held an approved veterinary qualification for **at least five years**. They are required to offer experience in veterinary public health (meat hygiene) over **at least six years** if gaining experience solely at an approved practice.

** For the purposes of this Diploma divisional and regional offices should be considered as "approved practices"*

4. There is no separate application form other than the candidate applications forms included with this Information Pack. Practices are approved for each individual candidate.
5. Any experience gained outside the UK, must be attested if requested by the Board for Veterinary Public Health (Meat Hygiene) and State Veterinary Medicine. Candidates should bear in mind that the Diploma examination will be based on relevant UK legislation.
6. The experience offered for the Certificate may be counted towards the time required for the Diploma, *at the discretion of the Board*.
7. The Board has discretion to increase the requirements for experience for any candidate above the minimum specified if it is considered to benefit the candidate.

APPROVAL OF EXPERIENCE

8. Please note that there is no E1a form for this subject. Choice of subject for the dissertation, a brief summary of aims of the project, and proposed methods to achieve these should be set out on a separate page and should be submitted either with the E1 form for initial approval of experience or with the E2 form for final approval of experience.

THE EXAMINATION

9. The examination consists of three Sections:
- (a) A Dissertation OR 2 Published Papers
 - (b) TWO x 3 hour written papers, and
 - (c) a clinical, oral, and practical examination.

SUBMITTED WORK FOR EXAMINATION

Dissertation

10. Choice of subject for the dissertation, a brief summary of aims of the project, and proposed methods to achieve these should be set out on a separate page (please see paragraph 8). **No exemption is permitted.**
11. Candidates should submit a dissertation on a topic in the field of veterinary public health (meat hygiene). This dissertation should contain evidence of the candidate's investigative abilities, and should have an introduction, a review of literature, materials and methods, a discussion and a conclusion. It should be in a format similar to that required for other postgraduate qualifications, and two copies, typed and bound, are required. The candidate should keep a copy.
12. If any original handwritten records are included, they must be legible; otherwise, typed or printed copies must accompany them.
13. The submission should be accompanied by a signed and dated statement adapted from the template declaration as laid out in the B1 Guidance Notes.
14. Candidates may **not** use all or part of the work prepared and submitted for another postgraduate qualification including Diploma of Fellowship, as all or part of their dissertation for an RCVS Diploma.
15. Candidates are also asked to submit an electronic version of their submitted work together with their hard copy. This will be retained at RCVS unless requested by the examiners for purposes such as checking the word count. The electronic version should be Microsoft Office 2000 or XP compatible and should be submitted on CD. Please ensure that the disks are easily identifiable by placing them in an envelope with your name, and 'Electronic version of submitted work for Diploma in Veterinary Public Health (Meat Hygiene) marked clearly on the front.

Word Count

16. The dissertation **must not exceed 10,000 words** (excluding references). A word count must be shown on the front cover of the Dissertation.

Two Published Papers

17. Candidates are alternatively required to submit as part of the Diploma examination two principal author papers which are peer reviewed, indicating current interests and have **not previously** been submitted for another RCVS post-graduate qualification. The subject proposed by the candidate **must receive prior approval by the Board** and each application must be accompanied by a brief summary. The work should be clinically relevant and contain original work or thought and should either be published in or accepted for publication by a refereed journal. For those in government service, Public Reports that have been presented at official plenary sessions could also be acceptable.

18. **Three copies, in a secure cover are required.**

19. The following statement should be included at the front of each copy of the published papers.

Published papers submitted in part fulfilment of the requirements for the RCVS Diploma in.....by (name of candidate).

*Acknowledgements are due to: name.....for (description of assistance given).
These papers have not been submitted for another RCVS qualification.*

20. Candidates may **not** use all or part of the work prepared and submitted for another postgraduate qualification, including the RCVS Diploma of Fellowship, as all or part of their submitted work for an RCVS Diploma. However, publications in peer reviewed journals **arising from** any postgraduate degree, for example, a PhD or Masters thesis, could be used towards a subsequent Diploma if publications of this type form part of the Diploma requirements and are appropriate to the discipline.

Grading Scheme

21. The submitted work will be graded "Good Pass", "Pass", or "Fail".

- **Good Pass**—(60% or over) - the work will be lodged in the RCVS Library as a suitable example for future candidates.
- **Pass (defined as 50%)**—The work is adequate to enable the candidate to proceed to the remaining sections of the examination, but the submitted work may need to be revised by the date of the clinical, oral, and practical for lodging in the Library if the candidate is successful in the examination as a whole.
- **Fail (below 50%)**—the work is not adequate to enable a candidate to proceed to the remaining sections of the examination for the year in question.

WRITTEN EXAMINATION

22. Candidates are warned that answers should be given specifically and that illegible handwriting may result in examiners being unable to award marks for information which candidates intended to convey. In addition, the Examiners will take into consideration spelling and whether or not the question has been answered in the form requested.

Format

23. This Section consists of 2 three-hour written papers.

Paper I—will consist of 5 essay-type questions of which the candidate must answer 4.

Paper II—will consist of 5 essay-type questions of which the candidate must answer 4

Marks Scheme

Paper I—will be marked out of 50 marks

Paper II—will be marked out of 50 marks

Total Mark for this Section (b) = 100 marks

CLINICAL, ORAL, AND PRACTICAL EXAMINATION

24. The clinical, oral, and practical examination will last a maximum of three hours.

25. The oral examination will commence with a discussion aimed at clarifying any points from the written examination or submitted work which the examiners wish to explore further in order to ascertain the understanding of the candidate.

26. The candidate will be given every opportunity to correct factual errors made in the submitted work or the written exam.

27. There will then follow a period of open questioning from each of the examiners. The questions will be designed to explore the candidate's practical problem solving skills and will be based upon common situations that an OVS may be expected to deal with in the course of his/her duties. Practical props such as microbiological reports, thermographs, and audit reports will be utilised.

28. The candidate will then be taken for a walk through part of the processing plant and asked to describe and comment on processes/practices observed. This may include operational hygiene, layout of establishment etc.

29. The final part of the examination will consist of an examination of carcasses and viscera in order to ascertain the candidate's knowledge of the inspection process, basic pathology, and ability to come to rational decision/dispositions. The candidate will be expected to speak knowledgeably on and identify carcasses' species, sex, grade etc.

Marks Scheme

30. Candidates will be given an overall mark for the clinical/oral/practical out of 100.

TOTAL Mark for this Section (c) = 100 marks

ADVISERS

31. Candidates should consult the RCVS Register of Members for a suitable qualified and willing individual (someone holding a Diploma or equivalent) who is familiar with the RCVS Certificate or Diploma examination system and is clinically active. Alternatively the Board will put candidates in touch with an appropriate colleague. An adviser should be found prior to enrolment. All application forms should be counter-signed by the adviser to the effect that he/she has agreed to advise the candidate.

32. Candidates are urged to seek advice from their advisers when preparing for the examination.

Abbreviation for Qualification

33. Successful candidates for the Diploma in Veterinary Public Health (Meat Hygiene) are permitted to use the abbreviation "**DVPH(MH)**" after their names in the RCVS Register of Members, and on practice plates and stationery, etc.

Originated: November 1995

Revised: Nov 1996/ March 1997/June 1998/ Jan 2000/ Jan 2003/ Dec 2003/March 2007

THE ROYAL COLLEGE OF VETERINARY SURGEONS
DIPLOMA IN VETERINARY PUBLIC HEALTH (MEAT HYGIENE)

SYLLABUS

Introduction

Candidates must have knowledge of all aspects of the meat industry at a standard that would be expected of an experienced Official Veterinary Surgeon (OVS) who has already obtained the Certificate of Veterinary Public Health. This syllabus should, therefore, be read in conjunction with that for the Certificate in Veterinary Public Health since all the requirements of that syllabus are pertinent.

This syllabus applies equally to red meat animals, poultry species and wild game. In order to simplify the text the term 'slaughterhouse' is used as a synonym for both 'abattoir' and 'poultry processing plant'.

Legislation is of crucial importance to most operations of the meat industry. Specific legislation will not be referred to any section of the syllabus but the candidate will be expected to have a working knowledge of all current relevant EU Directives and Domestic Acts, Orders and Regulations.

Laboratory testing is used in various aspects of meat production, for example the assessment of the quality of water, the determination of the most probable number (MPN) of bacteria and the isolation of bacterial pathogens and spoilage microorganisms. Knowledge of the principles of the tests in common use for both product management and legislative purposes, and the way the results are interpreted, will be assumed.

Candidates will be expected to comment critically on all aspects of the syllabus with respect to both 'quality' and 'safety'.

SYLLABUS

THE FOOD CHAIN

- The methods available for the identification of the animal, its carcass, and the meat derived therefrom, through the food chain.
- Standard operating procedures (SOPs), and other necessary control measures, necessary for the effective implementation of Quality Assurance schemes appropriate for fresh meat and meat and meat products.
- Monitoring of the maintenance of the cold chain.

THE DESIGN AND CONSTRUCTION OF SLAUGHTERHOUSES, MEAT CUTTING PLANTS AND COLD STORES

- To comment critically on the design of existing buildings with respect to their layout and the materials used in their construction, and how these may influence the efficient operation of the plant.
- To offer constructive advice during the planning stage and construction of new buildings, with respect to their layout and the materials used in their construction.

POST-MORTEM CHANGES OCCURRING IN MEAT

- The biochemical changes that occur in muscle following death and how these changes can be modulated by the treatment of the animal before death and of the carcass meat after slaughter.
- The control of the prevalence of DFD beef, PSE pork and cold shortening.

QUALITY ASSURANCE (QA), INCLUDING HACCP SYSTEMS

- The relationship between (1) Good Management Practice (GMP), including Good Hygiene Practice (GHP), (2) Quality Control (QC) and (3) Quality Assurance (QA) systems, including those based on Hazard Analysis Critical Control Point (HACCP) principals, and their application to the meat industry.
- The development, implementation, verification and auditing of GMP, GHP, QA and HACCP systems, including the role of the OVS in training programmes.
- The application, and relevance, of EN ISO standards 9000 to 9004 to the meat industry.

RESIDUES

- The statutory residue testing programmes for meat and meat products.
- The principles of (1) the development of statistically based sampling programmes and (2) the biochemical, and other tests, in current use in statutory testing programmes.
- An appreciation of the MRLs for the principal classes of residue, and their significance.

DECONTAMINATION OF FRESH MEAT

- The principle methods available for reducing microbial numbers on fresh meat, including the principles of their mode of action.
- New developments in technology for product decontamination, and the likely impact that these may have on the food industry.

MEAT SPOILAGE

- The principle microbial and biochemical changes that occur during the spoilage of fresh meat and meat stored under a modified atmosphere.

- The methods available for the enumeration of spoilage micro-organisms.

CLEANING AND DISINFECTION

- The development and implementation of appropriate cleaning and disinfection protocols for use in slaughterhouses, meat cutting plants and cold stores.
- Methods for monitoring the effectiveness of cleaning and disinfection.
- The mode of action of the principal generic groups of detergents and disinfectants suitable for use in food processing environments.

COLD STORES

- The design and operation of chillers, freezers and blast freezers.
- The physical basis for cooling and freezing of meat.
- The implementation and operation of stock control programmes within cold stores.
- The function of the Intervention Board and how its existence influences national and international trade in meat.

FURTHER PROCESSING OF MEAT

- The preparation of mincemeat and meat preparations and the assessment of their microbiological quality.
- The technological principles of curing, fermentation, drying, irradiation and heat treatment as methods for extending the keeping quality of meat and meat products.
- The concept of 'hurdle technology'.
- 'Sous-vide' processing.
- Modified atmosphere packaging, including the rationale for the different systems currently in commercial use.
- Methods available for assessing shelf life.
- The critical assessment of food processing procedures in relation to the risk of botulism.

TREATMENT AND DISPOSAL OF WASTE

- The means available for the disposal of unfit meat, waste water and hides, bones and waste offal, and their control.

IMPORTATION AND EXPORT OF MEAT AND MEAT PRODUCTS

- A working knowledge of the procedures and protocols involved in the import and export on meat and meat products, including certification.

THE ROYAL COLLEGE OF VETERINARY SURGEONS

VETERINARY PUBLIC HEALTH (MEAT HYGIENE)

Reading/Reference List for candidates studying for the Certificate and Diploma

Candidates should note that the reading list for the Certificate and Diploma in Veterinary Public Health (Meat Hygiene) was frozen in 2002 and will eventually be withdrawn. Candidates are expected to research the literature for themselves and are recommended to make use of the RCVS Library and Information Service for this purpose (<http://www.rcvslibrary.org.uk/>, e-mail library@rcvs.org.uk or telephone 020 7222 2021). Candidates should also seek advice on suitable reading matter from their advisers.

Candidates will be expected to have a broad knowledge of the current literature. The following list is a guide only.

Advisory Committee on the Microbiological Safety of Food (1995). Report on Verocytotoxin Producing E.Coli. HMSO.

Advisory Committee on the Microbiological Safety of Food (1993). Interim Report on Campylobacter. HMSO.

Advisory Committee on the Microbiological Safety of Food (1996). Report on Poultry Meat. London. HMSO.

Bremner, A S, & Johnston, A M (1996) Poultry meat hygiene and inspection. Saunders Tindall.

Brown, M H (ed) (1996) Meat microbiology. London, Elsevier Applied Science.

FAO, (1991). Guidelines for slaughtering, meat cutting and further processing. Rome, FAO.

FAWC Reports.

- 1) Report on welfare of livestock (red meat) at slaughter.
- 2) Report on welfare of livestock when slaughtered by ritual methods. HMSO.

Food Safety Codes of Practice. 1-16. MAFF.

Gerrard, F & Mallion, F J, eds 1980. The complete book of meat. London, Virtue.

Gil, J I & Durao, J C (1990). A colour atlas of meat inspection. London, Wolfe.

Gracey, J F & Collins, D S, 9th ed (1992). Meat hygiene. London, Bailliere Tindall.

Gregory, N G (1998). Animal welfare and meat science. CABI Publishing.

Hannan, J & Collins, J D (1990). Scientific basis for harmonising trade in red meat. Dublin University College.

Herenda, D C, & Franco, D A (1991). Food animal pathology and meat hygiene. St Louis, Mosby Year Book.

Herenda, D V & Franco, D A (1996). Poultry diseases and meat hygiene. St Louis, Mosby Year Book.

Her Majesty's Inspectorate of Pollution (1992). Waste disposal and recycling animal: carcass incineration. London, HMSO.

Hersom, A C, & Hlland, E D, 7th ed (1980). Canned foods – thermal processing and microbiology. Edinburgh, Churchill, Livingston.

Hinton, H H, & Rowlings, C, (1997). Concerted action CT 94-1456 Factors affecting the microbial quality of meat. Vols 1-4. University of Bristol Press.

Hobbs, B C & Roberts, D, 6th ed (1993). Food poisoning and food hygiene. London, Edward Arnold.

Hubbert, W T, Hagstead, B V & Spangler, E, (eds) (1996). Food safety and quality assurance: foods of animal origin. Ames, Iowa State University Press.

Kempster, A J, Cuthbertson, A, & Harrington, G, (1982). Carcase evaluation in livestock breeding, production and marketing. London, Granada Press.

Lawrie, R A. 5th ed (1991). Meat science. Oxford, Pergamon.

Lawrie, R A, ed, (1980-1991). Developments in meat science vols 1-5. London, Elsevier Applied Science.

Mead, G C, (1980). Processing of poultry. London, Elsevier Applied Science.

Mitchell, J R, 2nd ed (1980). Guide to meat inspection in the tropics. Farnham Royal, Commonwealth Agricultural Bureaux.

Palmer, S R, Lord Soulsby & Simpson, D I H, (1998). Zoonoses. Oxford University Press.

Parry, R T, et al (eds) (1982). A manual of recommended methods for the microbiological examination of poultry and poultry products. London British Poultry Meat Inspection.

Pennington Group (1997). Report on the circumstances leading to the 1996 outbreak of infection with *E coli* O157 in central Scotland, the implications for food safety and the lessons to be learned. Edinburgh, The Stationery Office.

Petersen, G V, Madie, P & Blackmore, D K, (1991). Veterinary aspects of meat quality. (Foundation for Continuing Education of the NZ Veterinary Association publication no 138), Palmerston North, The Foundation.

Report of the Government/Industry Working Group on Meat Hygiene (1997). Forward Programme for the Poultry Industry. MAFF.

Report of the Government/Industry Working Group on Meat Hygiene (1997). Forward Programme for the Red Meat Industry. MAFF.

Richmond, Sir Mark, (1990). The microbiological safety of food: report of the Committee on the Microbiology Safety of Food. Part I. London HMSO.

Richmond, Sir Mark, (1990). The microbiological safety of food: report of the Committee on the Microbiology Safety of Food. Part II. London HMSO.

Springer, R A, (1998). Hygiene for management. Highfield Publications.

Wilson, A, 5th ed (1991). Practical meat inspection. Oxford, Blackwell Scientific.

Wilson, N R P, 2nd ed (1986). The meat hygienist's pocket book. Taunton, Association of Meat Inspectors.

Candidates are advised to have access to the MHS series of Meat Hygiene Videos and the Videos produced by EU.

Revised Mar99
Revised Nov99

**THE ROYAL COLLEGE OF VETERINARY SURGEONS
SPECIALISATION AND FURTHER EDUCATION**

DIPLOMA IN VETERINARY PUBLIC HEALTH (MEAT HYGIENE)

Application for FINAL approval of experience and for permission to submit an entry to the next examination

This form must be completed and returned to the RCVS, Belgravia House, 62–64 Horseferry Road, London SW1P 2AF **by 1 November** prior to the year in which you wish to enter the examination.

NO LATE APPLICATIONS WILL BE ACCEPTED

1. **NAME** in full (block letters)

2. **DEGREES/DIPLOMAS/CERTIFICATES** (in abbrev. form)

3. **ADDRESS** for all correspondence (block letters)

4. (a) **TELEPHONE** No(s) (for contact during day) (b) **FAX** No. (for contact during day)

5. **DATE OF ENROLMENT** (month/year)

If application for enrolment is being submitted concurrently with this application please state 'concurrent'.

6. EXPERIENCE (see byelaws an schedules)

| Veterinary Practice or other branch of profession (name and address) | Period of Employment (from/to) | List of veterinary activities |
|--|--------------------------------|-------------------------------|
| | | |
| | | |
| | | |
| | | |
| | | |

If there has been any change in the work-load of the establishment, or in your personal work-load, since you applied for enrolment, please give details below:

7. ATTENDANCE AT RELEVANT SHORT COURSES

Candidates must attach a copy of their RCVS CPD Record Card for each year for which they are applying for final approval of experience. Details of all relevant short courses, conferences and meetings attended should be recorded on the Record Card. Candidates must comply with the annual recommended minimum hours of CPD otherwise final approval of experience and permission to sit the next examination will not be granted.

8. OTHER INVOLVEMENT IN RELATION TO VETERINARY PUBLIC HEALTH

List any attendances at relevant conferences, congresses, meetings, symposia etc., with dates:

9. PUBLICATIONS/ARTICLES/PAPERS/LECTURES

Give details below (including any involvement in the instruction of others):

10. OTHER POSTGRADUATE STUDIES

During the period of experience being offered, have you been or are you studying for any other postgraduate qualification? **YES / NO?**

If yes, please give brief details:

11. TITLE OF DISSERTATION

12. I HEREBY APPLY FOR FINAL APPROVAL OF EXPERIENCE AND FOR PERMISSION TO SUBMIT AN ENTRY TO THE CERTIFICATE EXAMINATION IN VETERINARY PUBLIC HEALTH

I certify that the period of experience being offered has not been/is not being offered to meet the requirements of the byelaws for any other RCVS Certificate or Diploma.

13. CONFIRMATION OF INTENT TO SIT THE NEXT EXAMINATION

If approval of experience is granted, I do / do not (delete as appropriate) intend to submit an entry to the next examination (closing date for receipt of entries is 1 March).

Name _____

Signature _____

Date _____

PLEASE RETURN ORIGINAL FORM PLUS SIX COPIES

THE FOLLOWING SECTION SHOULD BE COMPLETED BY YOUR ADVISER

I confirm that I am acting as this candidate's Adviser.

Name _____
(block capitals)

Signature _____

Date _____

PLEASE RETURN ORIGINAL FORM PLUS SIX COPIES

DIPLOMA IN VETERINARY PUBLIC HEALTH (MEAT HYGEINE)

Candidates should refer to the lists of Specialists and Diploma holders published in Section 3 of the RCVS Register of Members

April 2007

DIPLOMA IN VETERINARY PUBLIC HEALTH (MEAT HYGIENE)

THURSDAY 17 JULY 2003

PAPER I

(3 hours)

Candidates are required to answer **FOUR** of the following **five** questions.

Allow 45 minutes per question.

Illegible handwriting or failure to answer the question in the form required may result in examiners being unable to award marks for information which candidates intended to convey.

1. Describe the measures currently in place in the United Kingdom in respect of Transmissible Spongiform Encephalopathies (TSEs) of animals.

Discuss in your answer the current TSE testing of cattle and sheep in the United Kingdom abattoirs.

2. **List** the types of residues that may be found in food of animal origin. Indicate briefly the controls that are in place to reduce or eliminate the risk of residues being present and how the consumer can be assured.

In addition describe the requirements of the European Directive on Veterinary Residue Surveillance Scheme applicable in the Member States. **Outline** how these requirements relating to meat animals are achieved in Great Britain.

3. Many systems for the production of food of animal origin emphasise the importance of a "farm to fork" holistic approach to food safety and quality. Discuss the advantages of such a system over that currently in use and how it might operate in the United Kingdom.

4. "No matter how hygienically meat is produced there is no such thing as zero risk of pathogens being present."

Describe the requirements for the growth of bacteria in food that are relevant to meat (both red and poultry meat) and discuss the relevance of the requirements in meat product manufacture and subsequent storage in different forms.

5. "Currently control for most meat borne parasitic zoonoses control is at post mortem meat inspection."

Describe **briefly** the specific actions at meat inspection of red meat animals that are intended to identify the presence of parasitic zoonoses as part of the judgement as fit for human consumption. Discuss the effectiveness of the current system and how the controls could be moved back to the production stage, using where possible examples of specific parasites to indicate how necessary and or effective these controls might be.

THE ROYAL COLLEGE OF VETERINARY SURGEONS
DIPLOMA IN VETERINARY PUBLIC HEALTH (MEAT HYGIENE)

THURSDAY 17 JULY 2003

PAPER II
(3 hours)

Candidates are required to answer **FOUR** of the following **five** questions.

Allow 45 minutes per question.

Illegible handwriting or failure to answer the question in the form required may result in examiners being unable to award marks for information which candidates intended to convey.

1. You have been asked to advise a food business that is planning to start a new full throughput meat cutting plant to produce health marked minced meat for the export market. **Outline** your advice to the plant operator to assure food safety in terms of minced meat produced in the premises. Indicated the legislative requirements relating to the use of raw materials for production of minced meat and microbiological testing of minced meat.
 2. What methods can be used to assess the efficiency of electrical stunning in broiler chickens under commercial conditions? Outline the difficulties associated with the methods.
 3. Briefly outline the legislative requirements of post mortem inspection procedures and healthmarking for **wild** and **farmed** deer carcasses in the United Kingdom.
 4. From a public health perspective discuss the risk of food being a vector of members of the *Mycobacteria* spp and the controls currently in place in the United Kingdom.
 5. Briefly describe the steps in a cleaning and disinfection protocol for a large red meat slaughterhouse. Discuss the methods available to a plant operator to check the efficiency of cleaning and disinfection.
-