SOP: Guide for developing questions for the ECVCP Examination		European College of Veterinary Clinical Pathology
Document 1.7 (developed from previous Document #4, version 3)	Version: 1	
Pages: 13	File short name: Guide for developing exam questions	

1. Title:

Guide for developing questions for the ECVCP Examination

2. Section:

ECVCP Diplomates and Examination Committee

3. Scope:

To elevate the standard of ECVCP Examination questions, to standardise their format, to update associated documents (see **Appendices 1.7.1.i-v**), and to improve the efficiency of examination preparation.

4. Equipment list:

Appendix 1.7.1.i: MCQ Template

Appendix 1.7.1.ii: MCQ Categorisation

Appendix 1.7.1.iii: Examples of poorly constructed MCQs

Appendix 1.7.1.iv: Glass Slide Submission Form

Appendix 1.7.1.v: Projected Images Submission Form

5. Procedure Instructions

The Diplomate should follow the instructions in Appendix 1 to submit high quality examination questions using the relevant forms (**Appendix i** for MCQs; **Appendix iv** for glass slides, and **Appendix v** for projected images). The Diplomate should refer to additional advisory information in **Appendices ii** and **iii**.

The Diplomate should send the questions to the Exam Question Manager (currently David Ledieu (david.ledieu@novartis.com), who will perform an initial review of the questions before forwarding to the Chair of the relevant examination subcommittee. Glass slides should be mailed directly to the Chair of the relevant examination subcommittee (see **Appendices iv** and **v**).

6. Interpretation of Results

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After submitting the question(s) the material will be reviewed by the relevant examination subcommittee Chair, who may have immediate comments regarding suitability and necessary editing and may request the Diplomate adjusts accordingly. If the subcommittee Chair accepts the material, they will inform the Exam Question Manager, who will record the contribution for recertification purposes in the 'Exam Question Status' spreadsheet shared with the Diplomate Certification Committee. (The Examination Chair also has access to this file to record question contributions received directly from subcommittee members.)

The material will be subject to further review by other subcommittee members, the Examination Chair and Officer, and by the external reviewer(s). The Examination Committee can edit the material as necessary without further involvement of the initial author. If extensive revision is necessary, the Examination Chair will email the Diplomate informing them of the changes, for training purposes.

7. Quality management information

Relevant Documentation on QM processes of the ECVCP; Information Brochure

8. Terms and conditions

Questions which are accepted by the Examination Committee will count towards recertification points. Questions requiring extensive revision or which are rejected will not.

9. References

Appendices 1.i-v

Appendix 1

GUIDE FOR DEVELOPING QUESTIONS FOR THE ECVCP EXAMINATION

A. FORMATTING GUIDELINES FOR MULTIPLE CHOICE QUESTIONS

(recertification points: 1.5 per MCQ)

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PLEASE ADHERE EXACTLY to the formatting guidelines and use the template provided in Appendix i. This will greatly facilitate the ECVCP Examination Officer's and Chair's task of editing questions and preparing the exam. Questions which are incorrectly formatted will be rejected.

If you are uncertain as to classification of a question by category (see **Appendix ii**), question type or source type, leave these sections blank.

B. CONSTRUCTION GUIDELINES FOR MULTIPLE CHOICE QUESTIONS

1. Many multiple choice questions are rejected due to obsolete references. Please check the reading list carefully. Note that the cut-off date for journals is now 31st December of the year preceding the Examination (for both Phase 1 and Phase 2 Examinations).
2. Many multiple choice questions are rejected because of poor construction or interpretability. Often the subject material is desirable, but considerable labour is required to salvage the question.
3. Questions testing candidates' knowledge, skill, and understanding of principles, concepts, interpretation, and techniques are preferred over questions asking for memorisation of details and statistics which may be easily looked up. Questions based on established knowledge available in textbooks and review articles are preferred. Questions based on single study research articles should be limited and are generally only acceptable if published in *Veterinary Clinical Pathology*.
4. Multiple choice questions for the ECVCP examination generally consist of a brief stem (introductory question) and four short responses or "foils" (one correct and three distractors). See **Appendix i**. Each question may have only one correct answer. Distractors should be unambiguously incorrect.
5. Images, graphs, data tables and diagrams may be included in the stem. Be aware that ExamSoft does not allow for large or high-resolution images (i.e., large photomicrographs of cytology or haematology slides are not suitable but a cropped image to show a particular feature would be acceptable). The use of an image from a textbook from the reading list is possible (for example, asking which legend is appropriate). *If using an image under copyright, please be sure that its use is allowed.*
6. The stem must be clearly formatted and stated as a question. Stems given as incomplete statements should be avoided. The problem to be solved should be stated **as clearly as**

possible so that the candidates know what is being asked and what kind of response is expected. Someone who is knowledgeable about the subject should be able to answer the question without looking at the foils ('One Best Answer' type questions). The following aspects should be considered:

a. Negative stems, long wordy stems, statements giving background information, and diffuse stems should be **avoided**.
b. True/False questions are NOT acceptable.
c. Stems should generally be **under 100 characters in length** but may be longer in certain circumstances (see 6.f). Questions requiring data interpretation should be reasonable in the amount of data included (e.g., data tables should include no more than 15 data points). Remember, candidates have only a limited amount of time to read and respond to each question. This is not an exam to test reading speed.
d. Avoid unfamiliar or colloquial terminology (e.g., "rump" vs "hindquarters"). The difficulty must arise from the subject matter, not from the wording.
e. Pyramidal and sequential questions are not acceptable.
f. Multi-step questions asking the candidate to demonstrate deeper comprehension and interpretative skills are desirable. These typically involve a longer stem or clinical 'vignette', or data table, followed by 2-4 related MCQs.

7. When writing foils, choose a correct answer that is indisputable. Ideally, the incorrect foils should be clearly identifiable from the reference. Make sure the distractors are incorrect, but plausible to candidates who do not know the answer.
    a. Foils should be **under 100 characters in length** and may be up to 200 characters. Generally, foils should be shorter than the stem.
    b. The correct answer should not be noticeably longer or shorter than the distractors. All foils should be homogenous in type (see examples below and see **Appendix iii** for examples of what to avoid).
    c. The foils should be arranged from shortest to longest, labelled A through D.
    d. Include as much information as possible in the stem and as little in the foils. Information given in multiple foils can often be moved to the stem, to avoid duplication.
    e. Avoid irrelevant clues to the correct option.
    f. Avoid complex, imprecise wording.

g. Avoid alternatives that are synonymous with, include, or overlap others.
h. Avoid the use of non-relevant sources of difficulty, such as requiring complex calculations when only knowledge of a principle is being tested.
i. Each foil should be clearly correct or incorrect. Avoid ambiguous or partially correct options. Careful reading of source material is necessary to ensure this. Sloppy questions frequently contain partially correct distractors.
j. Responses such as "All of the above," "None of the above," "Two of the above," are not accepted.

8. Please see the NBME Item Writing Guide for further guidance in constructing good multiple-choice questions, especially chapters 2, 3, and 5. (https://www.nbme.org/item-writing-guide)
9. See **Appendix iii** for examples of unacceptable, poorly constructed MCQs.

C. GUIDELINES FOR PREPARATION OF VISUAL EXAM MATERIALS FOR HAEMATOLOGY AND CYTOLOGY SECTIONS
(Recertification points: 7.5 per glass slide case; 1.5 per projected image case)

The objective of visual materials should be to discriminate the experienced from the inexperienced clinical pathologist.

1. Glass slides:
   a. Submit at least **ten copies** (for haematology peripheral blood cases) and at least **five copies** (for haematology bone marrow and cytology cases) of each proposed item. Cases do not have to be particularly obscure – e.g., a good example of a soft tissue sarcoma with nine slides is more useful than a phaeochromocytoma with only three slides.
   b. Slides should be **uniform** in composition.
   c. Slides should be **cover-slipped.**
   d. Identify each slide with a slide number and name on a removable label.

e. For each item submitted, **include a printed copy of your written report** (in English), to include description, interpretation and comments.
f. Complete and print the Glass Slide Submission Form (**Appendix iv**).
g. Contact Sue Lennon (secretariat@ecvcp.org) for the **current shipping address** (usually the Chair of the relevant subcommittee). Ship slides in suitable containers, with printed copies of the submission form and your report.
h. **Email the Exam Question Manager** (currently David Ledieu: david.ledieu@novartis.com) with an electronic copy of the submission form and your report and the completed Appendix iv form. Your contribution will be recorded for recertification purposes.

2. Projected Image Questions:
   a. **High quality JPG or TIFF images (min. 300 dpi)** are used to construct one or more questions aimed at 1) identification of a structure, 2) asking for a diagnosis or an interpretation and/or 3) additional questions based on material depicted.
   b. Images regarding cytochemistry/immunocytochemistry are also appreciated. Submit high quality JPG or TIFF images of both the Romanowsky stained slide and the slide with the special stain.
   c. Up to four pictures may be used to illustrate a case (e.g., image of the blood tube, gross appearance of the glass slide, low magnification, high magnification for details, etc.). Graphs and scatter plots may also be used but limit additional data, as the time for each image is minimal. They should be of sufficiently high quality for projection onto a screen.
   d. Complete the Projected Images Submission Form (**Appendix v**). Give the question(s) appropriate for the image depicted (e.g., morphologic diagnosis (es), possible cause(s), name the disease, suggest a pathogenesis, differential diagnoses, commonly associated conditions etc.). Include what you consider to be acceptable answers. Remember that candidates have 30-60 seconds per image (often under 45 seconds), depending on total number of images, to examine the image, read any case information, read the question, and formulate their answer(s). Each case is assigned on average 2 points.

e. **Email the Exam Question Manager** (currently David Ledieu: david.ledieu@novartis.com) with the files of the image(s), the completed Appendix v form, and (if you feel it would be helpful) a copy (in English) of your report for that case. Your contribution will be recorded for recertification purposes.

EXAMPLES OF MULTIPLE-CHOICE QUESTIONS FOR THE ECVCP EXAMINATION

1. What does the standard deviation index best reflect?

A. Total error

*B. Systematic error

C. Inter-day precision

D. Intra-day precision

Answer: B. Systematic error

Reference: External QA. 16 pages, 2015. Vol 44(4):477-492. p.479 https://doi.org/10.1111/vcp.12299

Contributor: XXXXXX

Category: y-2023, se-GEN, sp-ALL, Su-LM.QAC

Q type: OBA

Source type: Journal – VCP QA guidelines

2. What does the term "asymmetric cell division" describe?

A. Cell division with irregular mitotic figures

B. Neoplastic cell division in the bone marrow

C. Bone marrow dysplasia associated with FeLV infection

*D. Production of two daughter cells with different properties

Answer: D. Production of two daughter cells with different properties

Reference: Schalm, 7th Edition, p. 10

Contributor: XXXXX

Category: y2023, se-HEM, sp-ALL, su-BOM

Q type: OBA

Source type: Textbook – Schalm

3. What is the pathogenesis of spherocyte formation?

A. Fragmentation due to hyperlipaemia

B. Membrane loss due to low lipid content

C. Membrane folding due to hypernatraemia

*D. Membrane loss due to action of macrophages

Answer: D. Membrane loss due to action of macrophages

Reference: Stockham & Scott, Fundamentals of Veterinary Clinical Pathology, 2nd ed. Chapter 3, p. 146 table 3.7

Contributor: XXXXX

Category: y2023, se-HEM, sp-ALL, su-ERY, su-IMH

Q type: OBA

Source type: Textbook – Stockham

4. What are the characteristic cytologic features of a ferret chordoma?

*A. Physaliferous cells and pink extracellular matrix

B. Round cells with intracytoplasmic blue granules

C. Homogeneous and well differentiated spindle cells

D. Small basaloid epithelial cells and extracellular keratin

Answer: A. Physaliferous cells and pink extracellular matrix.

Reference: Campbell, Exotic Animal Hematology and Cytology. Fifth edition., 2022; Chapter 7, p. 127.

Contributor: XXXXXX

Category: y2023, se-CYT, sp-EXO, su-CNS, su-NEO

Q type: OBA

Source type: Textbook - Campbell

5. A 2-year-old dog presenting with icterus and weight loss has the following laboratory results:

Analyte	Patient	Ref interval
Total bilirubin (µmol/L)	99.2	1.7-10.3
Alkaline phosphatase (IU/L)	2980	50-250
Alanine aminotransferase (IU/L)	890	20-100
Gamma-Glutamyl transferase (IU/L)	28	1-8
Serum bile acids (µmol/L)	175	0-5
Cholesterol (mmol/L)	10.2	1.7-6.2

What is the most likely diagnosis?

A. Hypothyroidism

B. Chronic active hepatitis

C. Glucocorticoid hepatopathy

*D. Extrahepatic bile duct obstruction

Answer: D. Extrahepatic bile duct obstruction

Reference: Stockham 2nd edition, chapters 12 and 13

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Contributor: XXXXXX

Category: y2023, se-CHE, sp-CAN, su-LIV, su-ENZ

Q type: OBA-INT

Source type: Textbook – Stockham

EXAMPLES OF PROJECTED IMAGES QUESTIONS FOR THE ECVCP EXAMINATION

1. Example of projected image question for HAEMATOLOGY

3-month-old DSH cat

RBC count by ADVIA 2120

	Result	Reference intervals	
RBC			
RBC ($x10^6/\mu L$):	5.06	**6**	**10.1**
HGB (g/dL):	14.10	**8,1**	**14,2**
Cellular HGB (g/dL):	7.30	**7,5**	**13,7**
Hct (%):	21.60	**27,7**	**46,8**
MCV (fL):	42.60	**41,3**	**52,6**
MCH (pg):	27.80	**12**	**16**
MCHC (g/dL):	65.30	**27**	**32,8**
CHCM (g/dL):	33.90	**26,9**	**33**
CH (pg):	14.00	**12**	**16**
CHDW (pg):	3.07	**1,6**	**2,7**
RDW (%):	29.20	**14,4**	**19,4**
HDW (g/dL):	6.40	**1,6**	**2,9**
NRBC /100WBC:		**0**	**0**

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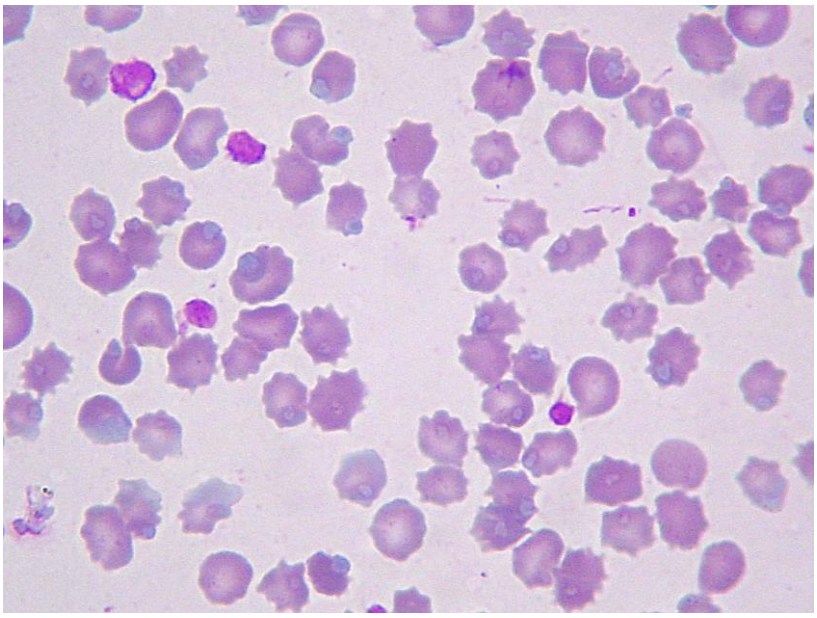

Blood smear

Question: Based on the blood smear, how could you explain the discrepancy between Hgb and cellular Hgb? (1 point)

Answer: Haemolysis (0.5 pt) and Heinz bodies (0.5 pt)

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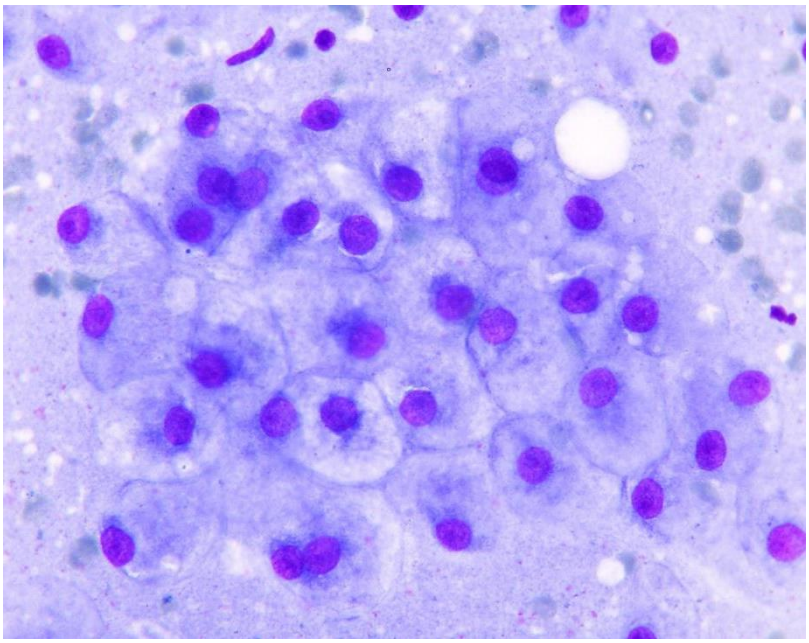
2. Example of projected image question for CYTOLOGY

Dog, English setter, F, 8y, Enlarged liver, FNCS



Question A: What substance, other than water, gives this appearance to the hepatocyte cytoplasm? (1 point)

Answer: Glycogen (1 point)

Question B: How can the presence of this substance be confirmed? (1 point)

Answer: Special stain: PAS and PAS DIASTASE (1 point; 0.5 point if only PAS given)