Higher Specialist Diploma

Cellular Pathology

September 2025

Short Answer Questions

60 minutes

Attempt all Four Questions

Instructions to Candidates

1. Record your candidate number and HSD discipline on the front sheet of the answer booklet.

2. Record your candidate number, the question number and the page number in the spaces provided on the answer sheets.

3. Begin each new answer on a new page.

4. Each question is worth 25 marks.

1. You are training colleagues about the immunocytochemical antibodies that are used in the investigation of melanocytic lesions. Identify the predictive and prognostic immunocytochemical antibodies that are commonly used in such investigations and briefly explain the reasoning for their use in the context patient management.

2. You have been asked to do a presentation on 'rapid fixation' within the field of cellular pathology that describes the context in which this procedure may be required and the risks to patients and laboratory staff. Outline what information you would include in such a presentation.

3. Your laboratory is preparing for a UKAS inspection. Explain the differences between the three main types of audits for UKAS inspection requirements that are routinely performed within a cellular pathology laboratory, how are they used and for what purpose?

4. A member of your team is uncertain on the principle and role of in-situ diagnostic-based techniques within cellular pathology. Describe, with examples, how you would explain this to your fellow team member

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Essay Paper

120 minutes

Attempt 2 out of 5 Questions

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3. Begin each new answer on a new page.

4. Each question is worth 100 marks.

1. Critically debate the benefits and limitations of Mohs procedures within a modern health care pathology process.

2. ‘An image paints a thousand words!’ Critically discuss the impact and benefits of digital pathology within cellular pathology.

3. Discuss and debate the ‘Hub and Spoke’ model for full laboratory integration within cellular pathology.

4. Discuss the importance of the growing role of biomedical scientists in performing histological dissection.

5. Discuss and critique the statement ‘Special stains are of decreasing importance within cellular pathology.’

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Case Studies

120 minutes

Attempt all Case Studies

Instructions to Candidates

1. Record your candidate number and HSD discipline on the front sheet of the answer booklet.

2. Record your candidate number and the page number in the spaces provided on the answer sheets.

3. Begin **each new case study** on a new page.

4. Each case study is worth 100 marks.

5. For these case study questions you are strongly advised to answer the questions as they arise during the case study to avoid later information impacting adversely on your answers to the earlier questions by presuming an "outcome".

SEEN CASE STUDY

1.
A 80-year-old male patient who formerly worked in the building manufacturing industry presents at his GP with haemoptysis and shortness of breath. The patient has a history of a smoking habit of 30 cigarettes a day for over 50 years. A referral is made to the local hospital where the respiratory care team requested an initial chest x-ray and some cytological tests.

a. Critically review the cytological investigations that would be performed on this patient.
(10 marks)

b. The cellular material was then centrifuged and a cell block prepared. Comment and critically assess how best to maximise the cellular yield from such a procedure.
(10 marks)

The x ray revealed a medium sized mass on the upper aspect of his left lung some distance from the central bronchus. Following the cytological investigations a lung biopsy was requested. The findings from H&E stained slides performed on the blocks from the biopsy are seen below (**FIGURES 1** and **2**).

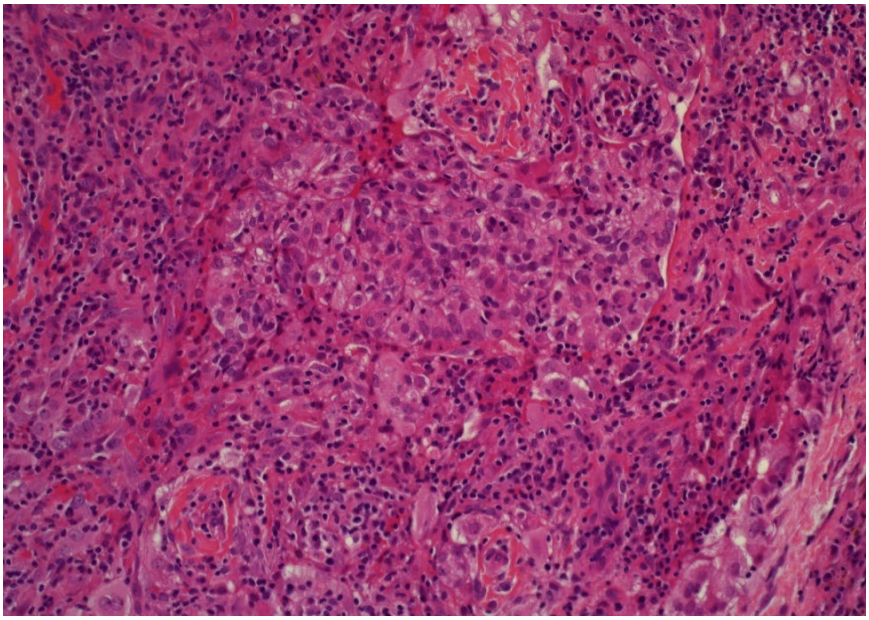

FIGURE 1: **HE Low power**

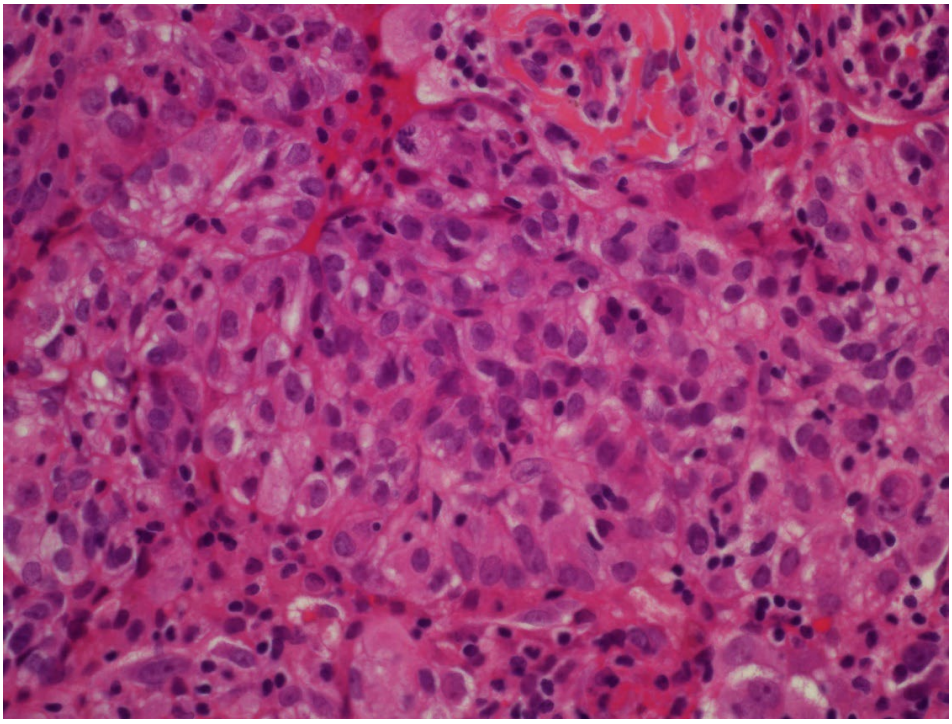

FIGURE 2: **HE High power**

c. Describe and discuss the structural and nuclear features of the atypical cells seen. (15 marks)

On review of this material an unexpected foreign body was identified (**FIGURE 3**).

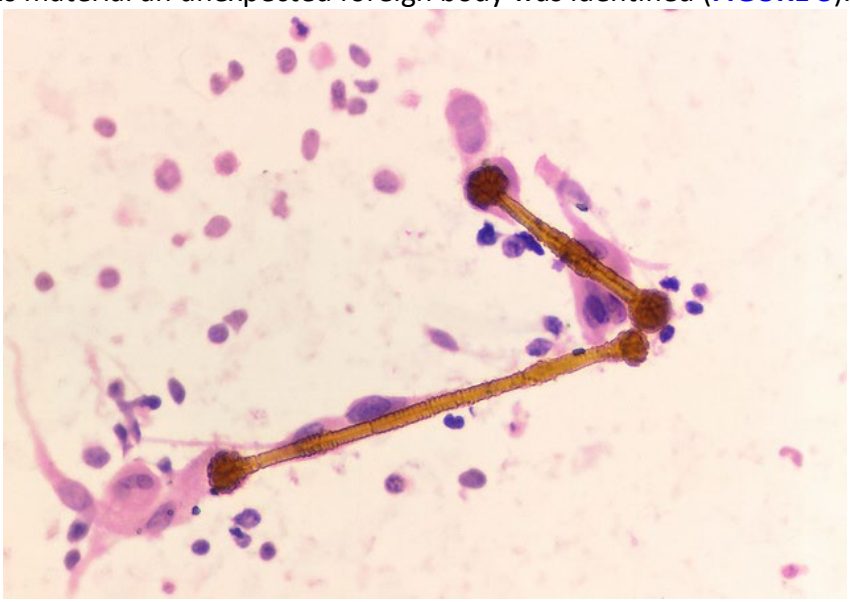

FIGURE 3: **HE Foreign Body**

d. Describe what name is given to this foreign body and explain its appearance. Critically evaluate what special stains can be used to highlight it? Diagnostically what form of lung cancer may this finding often support? (25 marks)

e. Discuss and appraise what immunocytochemical markers would you employ to support a diagnosis. (20 marks)

f. Explain the value of PD1 / PDL1 investigations in selected patients with lung cancer. Critically review what these investigations are and how they elicit an effect in terms of treatment for patients with lung cancer. (20 marks)

UNSEEN CASE STUDIES

2.

A 60 year old Caucasian woman reported to her GP with a firm hard lump in her left breast. On closer examination two other smaller lumps were palpable and in close proximity to the first larger lump. In addition, swelling in her left arm pit was apparent and the lady complained of joint and bone pain in the left arm. The GP referred the lady for a mammogram and requested a fine needle biopsy (FNA) of the breast lumps detected.

The mammogram Breast Imaging Report and Data system (BI-RADS) graded the breast lumps as category 5 (from a scale of 1 to 6, with a score of 6 being severe). This result indicated a likely hood of cancer (95%) and strongly recommending a FNA and lumpectomy. The FNA confirmed a high-grade breast carcinoma. The patient then had a subsequent mastectomy of the left breast.

a. Describe and evaluate the procedures for grossing a cancerous mastectomy? (20 marks)

There were five tumour nodules found within the left breast following grossing. These all revealed invasive breast disease.

b. Critically assess the investigative DIAGNOSTIC immunocytochemical tests you would be required to perform. (20 marks)

The patient was then selected for a sentinel lymph node biopsy (SLNB) assessment.

c. Discuss and evaluate what a sentinel lymph node is and the general approach adopted to assess SLNB for breast cancer in a routine cellular pathology laboratory (your answer should include details on sectioning and routine staining and immunocytochemical assessments). (20 marks)

d. Comment on and discuss the molecular based technique sometimes used in the assessment of SLNB for breast cancer cases? Discuss the principle of this investigation. (10 marks)

e. Critically discuss predictive markers that can be employed to evaluate this case. What are the significant indicators of such assays? (15 marks)

f. Evaluate the common targeted therapy regimens employed within the field of breast carcinoma, critically assess the methodology of these strategies. (15 marks)

3.

A 61 year old male patient undergoes a colon resection and a fresh specimen is received in the laboratory. The specimen is suspected clinically to have a differential diagnosis of lymphoma / stromal tumour / carcinoma / carcinoid. On slicing a firm white tumour is seen which is seen continuous with the epithelia.

a. Describe the optimal fixation and dissection of such a specimen. You may use diagrams to illustrate your answer. (20 marks)

A colonic malignancy is confirmed on H&E diagnosis.

b. Critically review the value of lymph node investigation in the evaluation of this condition. (10 marks)

c. Discuss the value of K-ras investigation of this sample. (10 marks)

The patient makes a full recovery but 12 months later on routine check-up shows signs of metastatic spread to the liver. A liver core sample is removed.

d. Discuss how this liver core sample should be handled in the laboratory to obtain maximum diagnostic information. Critique the special stains involved in the assessment of such a specimen (20 marks)

e. Name and justify which immunocytochemistry markers may be used to assist in the confirmation of this diagnosis. (20 marks)

f. Describe what factors may affect the quality of the immunocytochemistry staining. (10 marks)

The tissue from this case is seen to make a good control for future tests.

g. What information would you need to collect to ensure appropriate audit trail data? (10 marks)