Diploma of Expert Practice in Immunocytochemistry

Examination 2019

Paper 1

Short-answer questions

120 minutes

1. Attempt **6 out of 9** questions – **choose 2 from each section**
2. Each question is worth 20 marks
3. You must transfer your answers directly into the answer booklet

The question paper is not to be removed from the examination room

Pre Analysis

1. Discuss the artefacts encountered in the preparation of sections for immunocytochemistry analysis.

2. Discuss procedures for achieving ideal optimal fixation of tissue for immunocytochemistry investigations.

3. Discuss the importance of tissue sampling procedures for immunocytochemistry investigations.

Analysis

4. Define the terms “validation” and “verification” and describe the validation and verification of a newly introduced primary antibody for potential use in diagnostic immunocytochemistry.

5. Discuss and compare the importance of verifying pH buffer solutions in antigen retrieval.

6. Discuss the use and value of double labelling techniques with immunocytochemistry.

Post Analysis

7. Discuss and debate the importance of run logs on automated immunocytochemistry equipment.

8. Discuss the steps and procedures required to introduce a new antibody into a service repertoire.

9. Discuss the mechanisms used for monitoring staining quality in immunocytochemistry.

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Paper 2

Interpretive Questions

120 minutes

1. Attempt **3 out of 5** questions
2. Each question is worth 100 marks
3. You must transfer your answers directly into the answer booklet
4. Begin each new answer on a new page

1. Table 1 below shows a successive series of results your laboratory has received from the UKNEQAS for ICC and ISH EQA scheme for demonstration of KI67/MIB1:

Table 1

	Run I	Run II	Run III	Run IV
UKNEQAS	15	12	12	8
In-house	16	12	12	8

a. Comment on these results. (25 marks)

b. What actions would you take before the next KI67/MIB1 run? (30 marks)

c. Summarise the reasons behind the changes you would make. (20 marks)

d. Discuss the broader implications for your laboratory practice. (25 marks)

2. A 60 year old male presented to his GP with asthenia, fatigue, abdominal discomfort and bloody stools. His GP referred him for an abdominal CT scan which revealed a right abdominal extra-luminal mass measuring 110 x 90 mm. Histological examination of biopsies taken from the mass revealed neoplastic tissue composed of elongated, spindle-shaped cells with moderate nuclear pleomorphism. A diagnosis of gastrointestinal stromal tumour (GIST) was made.

a. Suggest a suitable panel of antibodies which could be used to confirm a gastrointestinal stromal tumour (GIST) and exclude any differential diagnosis in this case. (40 marks)

b. Describe the staining patterns of the antibodies you have named in a) and discuss the relative merits of each marker. (40 marks)

c. What further ancillary tests might be appropriate in the context of this tumour and why would these tests be used? (20 marks)

3. A 38 year old female presents to her GP with symptoms of diarrhoea, abdominal discomfort and rectal bleeding. The patient is referred for a colonoscopy procedure which identifies a grey-white mass in the rectum. A number of biopsies are taken from the rectal mass and sent to the histology laboratory. Histological examination of the biopsies reveals malignant glands infiltrating the rectal mucosa. The infiltrating epithelial glands have a cribriform architecture lined with cuboidal and columnar epithelia and the lumen of the glandular structures contains debris described as "dirty necrosis".

a. What tumour types would you consider in this case? (20 marks)

b. Critically appraise the panel of markers you would consider to confirm the tumour type in this case. (50 marks)

c. The patient is referred to the local hospital multi-disciplinary team meeting (MDTM) for review and management. What further investigations could be required and why? Discuss their significance. (30 marks)

4. A lady aged 50 attended a breast screening appointment for mammography. Initial radiological assessment identified a suspicious lesion and two needle core biopsies were taken from the lesion and sent to the laboratory for investigation. Initial HE staining indicated a differential diagnosis of ductal carcinoma in situ (DCIS) or ductal carcinoma.

a. Evaluate the use of immunocytochemistry (ICC) in the differential diagnosis of in situ and invasive disease in the breast. (50 marks)

b. If an invasive ductal carcinoma is confirmed, suggest a panel of markers which would help inform the patient's management. (35 marks)

c. Discuss how immunocytochemistry is used to differentiate between invasive ductal carcinoma and invasive lobular carcinoma. (15 marks)

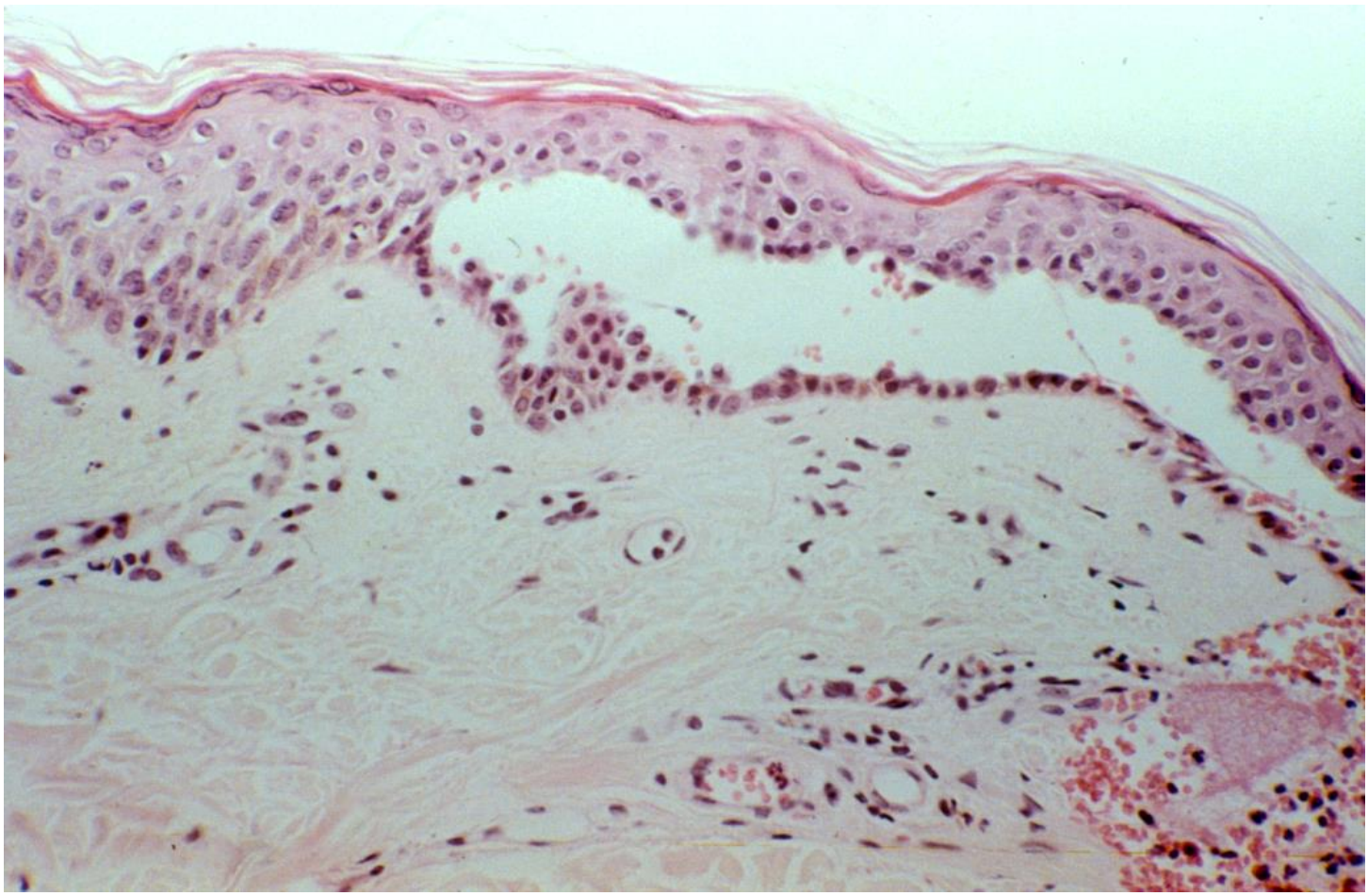
5. A 45 year old Jewish gentleman presented at a dermatology clinic with painful blisters in the mucosa of his mouth. In addition he also had skin blisters that come and went. The blisters wept, were crusty and eventually peeled off the skin surface resulting in ulcerated skin and mucosal lesions. The disease was thought to be an autoimmune disorder.

a. Discuss and describe the optimal specimen type to enable a reliable assessment of the patient's condition (25 marks)

b. Describe the investigations that would be performed including the selection of antibodies you may employ. (25 marks)

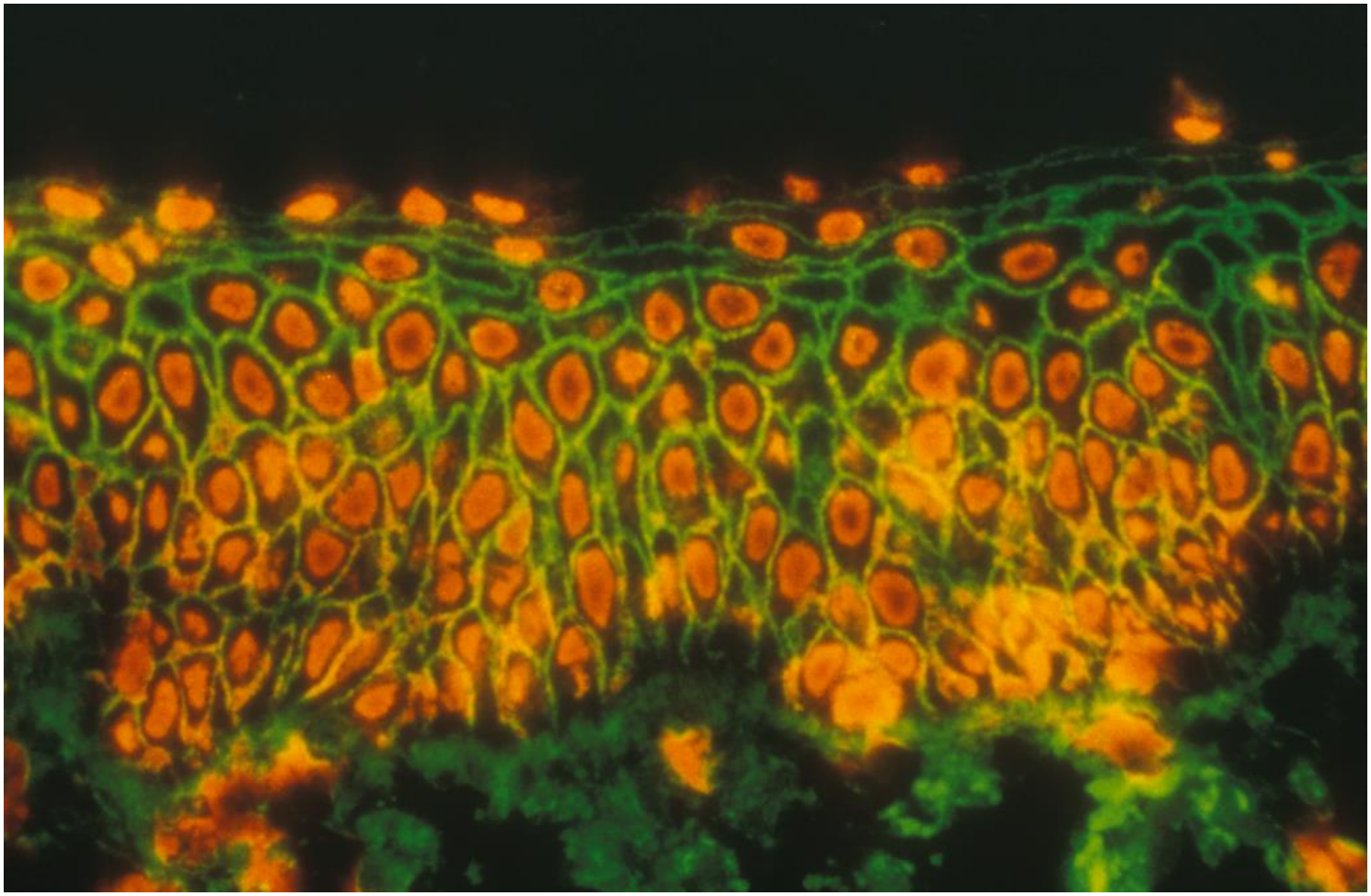
c. Figures 1 HE demonstrates the nature of the lesion microscopically. Describe the appearance of the lesion (20 marks)

Figure 1



d. Figure 2 Anti IgG staining demonstrates a characteristic pattern of staining. Describe the nature of the investigation shown and requirements for the laboratory equipment.
(20 marks)

Figure 2



e. From figure 2 - What is the probable diagnosis here? (10 marks)