

1. a) List **TWO** acceptable methods of collecting samples for urine cytology.

b) State **TWO** principal clinical indications for the use of cytology in disorders of the lower urinary tract.

c) List **THREE** entities in the differential diagnosis for each of the following findings on voided urine cytology:

i) signet ring cells

ii) atypical squamous cells

iii) *Candida* species

Marks
2
4
3
3
3

Model Answer

(2 marks)

a) Voided, post-instrumentation (wash, brush or retrograde catheterization of ureter), catheter, ileal conduit

(4 marks: 2 each)

b) Diagnosis of high-grade urothelial malignancies, follow-up of patients with a history of urothelial malignancy, screening of high-risk (for urothelial cancer) patients

(9 marks)

c)

i) Primary adenocarcinoma of bladder, metastatic adenocarcinoma (give only one point total - candidates may list 3 metastatic conditions), histiocytes, degenerated urothelial cells (3)

ii) Degenerated balloon cells, squamous cell carcinoma of bladder, transitional cell carcinoma (TCC) with squamous differentiation, urethral contaminant, gynecological tract contaminant (3)

iii) Candida cystitis, vaginal contaminant, laboratory contaminant (3)

2. a) List the **FOUR** MOST important points to include in a pathology report on salivary gland carcinoma.

- b) Name **TWO** specific salivary gland carcinomas for which histologic grading is pathologically relevant.

- c) List **TWO** risk factors for the development of salivary gland carcinoma.

- d) In general, what is the **SINGLE** MOST important pathologic prognostic factor for carcinoma of the head and neck?

Marks
8
4
2
1

Model Answer

a) (8 marks)

site of origin

histologic subtype (2 marks)

extent of disease/pathologic stage (2 marks; if size of tumour or extra-parenchymal

extension mentioned by themselves, each 1 mark to a maximum of 2)

completeness of resection/margin status (2 marks)

b) (4 marks)

mucoepidermoid carcinoma

carcinoma ex pleomorphic adenoma

adenocarcinoma not otherwise specified (NOS)

adenoid cystic carcinoma

c) (2 marks)

radiation

Epstein-Barr virus (EBV)

genetic predisposition

certain environmental exposures (nickel, chromium, asbestos, volatile hydrocarbons, mustard gas)

tobacco/smoking (0 marks; while there is a good association with development of Warthin tumour, there is no established link to salivary gland carcinoma)

d) (1 mark)

lymph node status

3. With respect to hamartomatous GI polyposis syndromes:

a) What is the mode of inheritance of Peutz-Jeghers syndrome (PJS)?

b) What is the characteristic molecular defect in PJS?

c) Excluding the GI tract, list the **FOUR** specific body sites that are at HIGHEST risk for the development of carcinoma in patients with PJS.

d) List **TWO** other hamartomatous polyposis syndromes of the gut.

Marks
1
2
8
4

Model Answer

a) autosomal dominant (1 mark)

b) germline mutation/loss of heterozygosity (LOH) in serine-threonine kinase STK11/LKB1, chromosome 19p13.3 (2 marks)

c) (8 marks)

breast, pancreas (cumulative risk 50% and 35% respectively, 2 marks each)

ovary, lung (cumulative risk 20% and 15% respectively, 2 marks each)

uterine cervix, endometrium, testis (cumulative risk 10%, 9% and 9% respectively (1 mark each)

d) (4 marks)

juvenile polyposis, juvenile polyposis/hereditary hemorrhagic telangiectasia (HHT) syndrome, Cronkhite-Canada syndrome, Cowden syndrome

4. With respect to the pathology of thrombosis:
a) List the **MAIN** components of Virchow's triad.

- b) List **TWO** causes of genetic hypercoagulability.

- c) List the **THREE** MOST common outcomes of thrombi.

- d) What are **TWO** of the MOST common causes of fat and marrow emboli?

Marks

3

4

6

2

Model Answer

- a) (1 mark each, total 3 marks)
endothelial damage, hypercoagulability, altered blood flow
b) (any 2 for 4 marks)
antithrombin III deficiency, protein C deficiency, protein S deficiency
c) (any 3 for 6 marks)
propagation, dissolution, organization and recanalization, embolization
d) (2 marks)
hip fracture, orthopedic trauma, CPR

End

Before you leave the room, please return your examination booklet(s) to the invigilator.