

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

SELECTION EXAMINATION LEADING TO MD IN
HISTOPATHOLOGY, CLINICAL HAEMATOLOGY AND
CHEMICAL PATHOLOGY – DECEMBER 2020

Date:- 2nd December 2020

Time:- 1.00 p.m. – 3.00 p.m.

ESSAY PAPER

Answer all questions.

Answer each question in a separate book.

All questions carry equal marks.

PART A
ANATOMICAL PATHOLOGY (GENERAL & SYSTEMIC)

1. Describe the pathogenetic basis of the following:

- 1.1. Impaired wound healing in a patient with poorly controlled long-term diabetes mellitus. (30 marks)
- 1.2. Development of Barrett oesophagus. (20 marks)
- 1.3. Bilateral retinoblastoma arising in a 2-year-old boy whose mother has also been diagnosed with a retinoblastoma. (20 marks)
- 1.4. Cardiomegaly in a patient with systemic hypertension. (30 marks)

2.

- 2.1. A 20-year-old woman presented with an anterior neck lump. On clinical examination, a 2 cm nodule was palpable in the thyroid.
 - 2.1.1. List four (04) pathological conditions that can cause a nodule in the thyroid in this patient. (10 marks)
 - 2.1.2. Describe the macroscopy and microscopy of one (01) of the pathological conditions mentioned in 2.1.1. (20 marks)

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- 2.1.3. Briefly describe the value and limitations of fine needle aspiration cytology (FNAC) in the diagnosis of a thyroid nodule. (30 marks)
- 2.2. A 24-year-old woman presents with dysuria, fever with chills and rigors. Renal angle tenderness was elicited at clinical examination. Acute pyelonephritis was diagnosed.
- 2.2.1. List three (03) microscopic findings in urine examination that support the diagnosis of acute pyelonephritis. (15 marks)
- 2.2.2. Describe the microscopic appearance of the kidney in acute pyelonephritis. (15 marks)
- 2.2.3. State three (03) complications of acute pyelonephritis. (10 marks)

PART B
HAEMATOLOGY

Answer 3.1 and 3.2 in two separate answer books.

- 3.
- 3.1. A 25-year-old woman was admitted with marked dyspnoea, palpitations and history of passing dark coloured urine of 2 days duration. On examination she was pale and icteric.

Her full blood count is given below:

Hb	5.5 g/dL
WBC	$7.0 \times 10^9/L$
Platelet count	$210 \times 10^9/L$
Reticulocyte count	12%

- 3.1.1. Name the underlying pathological process and list four (04) basic investigations (with expected results) you would do to confirm this process. (15 marks)
- 3.1.2. Blood picture revealed **spherocytes and polychromatic cells**. What are your differential diagnoses? (05 marks)

- 3.1.3. Outline specific **investigations** (with expected results) you would do to arrive at a diagnosis. (20 marks)
- 3.1.4. This patient was transfused with packed red cells. She developed fever within 15 minutes of initiation of the transfusion.
List five (05) causes for the above reaction. (10 marks)
- 3.2. A 78-year-old asymptomatic man was referred to the haematology clinic with the following full blood count.

Hb	12 g/dL
WBC	$0.8 \times 10^9/L$
Neutrophils	$0.4 \times 10^9/L$
Platelet count	$223 \times 10^9/L$

- 3.2.1. Interpret the given counts. (05 marks)
- 3.2.2. Name five (05) conditions which will give rise to the above counts. (05 marks)
- 3.2.3. State five (05) investigations you will do to arrive at a diagnosis explaining the value of each. (10 marks)
- 3.2.4. This patient was admitted to the hospital three days later, with fever.
Briefly outline the immediate and long-term management aspects. (30 marks)

PART C
CHEMICAL PATHOLOGY

- 4.
- 4.1.
- 4.1.1. Name the acute hyperglycaemic complications of diabetes mellitus. (05 marks)
- 4.1.2. Outline the biochemical features of the above complications giving the pathological basis of each feature. (50 marks)

- 4.2. A 36-year-old man presented with headache and episodes of sweating and palpitations for 3 months duration. He was not on any medication. He had a family history of thyroid cancer. His blood pressure was 160/100 mmHg.

Following results were obtained by laboratory investigations.

Blood

Sodium	140	mmol/L	(135-145)
Potassium	3.6	mmol/L	(3.5-5.0)
Creatinine	115	$\mu\text{mol/L}$	(70-120)
TSH	3.5	mIU/L	(0.35-5.5)
Fasting glucose	7.5	mmol/L	(3.5-5.5)

Urine Metanephrines

Metadrenaline	8.7	$\mu\text{mol/24 hrs}$	(<2.0)
Normetadrenaline	7.5	$\mu\text{mol/24 hrs}$	(<4.5)

- 4.2.1. What is the most likely diagnosis? (02 marks)
- 4.2.2. What is the possible coexistent condition that needs to be excluded? (03 marks)
- 4.2.3. State two (02) further tests you would carry out to exclude the condition you mentioned in 4.2.2, giving reasons. (06 marks)
- 4.2.4. Describe the possible reason for elevated fasting glucose level. (04 marks)
- 4.3. Given below are the results obtained at the initial presentation from a 3-year-old girl with difficulty in walking and short stature. She is being treated for hypophosphataemic vitamin D resistant rickets with high dose oral calcitriol and phosphate solution.

Serum (Fasting)

Corrected calcium	2.24	mmol/L	(2.2 – 2.7)
Phosphate	0.97	mmol/L	(1.45 – 1.78)
Alkaline Phosphatase	637	IU/L	(80 – 480)
Urea	4.6	mmol/L	(1.8 – 6.4)
Creatinine	49	$\mu\text{mol/L}$	(40 – 60)

- 4.3.1. What are the two (02) major organs that synthesize alkaline phosphatase? (02 marks)

- 4.3.2. Indicate the reason for drawing blood for phosphate in the fasting state. (04 marks)
- 4.3.3. What would be the expected urine phosphate level in this condition? (03 marks)
- 4.3.4. Mention one (01) long term renal complication of this treatment. (03 marks)
- 4.3.5. Name the analyte used to calculate the corrected calcium test and state the reason for this correction. (03 marks)
- 4.4. Mention the most appropriate biochemical investigation in the following clinical condition/status.
- 4.4.1. To assess the degree of liver injury in a 40-year-old man with the clinical diagnosis of acute alcoholic hepatitis. (03 marks)
- 4.4.2. A 70-year-old man on diuretic therapy presenting with muscle cramps. (03 marks)
- 4.4.3. To assess thyroid status after 3 weeks of starting thyroxine therapy. (03 marks)
- 4.4.4. To assess renal function in a 55-year-old woman with diabetes mellitus with a negative dipstick result. (03 marks)
- 4.4.5. To assess ovulation in a 30-year-old sub-fertile woman. (03 marks)