

**POSTGRADUATE INSTITUTE OF MEDICINE**  
**UNIVERSITY OF COLOMBO**

**MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION -**  
**FEBRUARY 2015**

**Date :** 16<sup>th</sup> February 2015

**Time:** 1.00 p.m. – 4.00 p.m.

**PAPER I (Analytical)**

**All four** questions to be answered.

Use a separate book for each of the four questions.

All questions carry equal marks

Write legibly.

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1. Describe the analytical principles of **methods** for measuring **any three (03)** of the following analytes. Where appropriate, comment on how the results may differ depending on the method or reagent kit chosen.
    - 1.1. Serum free light chains
    - 1.2. Glycosylated Haemoglobin (HbA1c )
    - 1.3. Lactate dehydrogenase (LDH)
    - 1.4. Urine  $\beta$ -human chorionic gonadotrophin ( $\beta$ -hCG)
  
  2. Write short notes on any **three (03)** of the following :
    - 2.1. Applications of gas chromatography-mass spectrometry (GC-MS) in clinical chemistry
    - 2.2. Cloned enzyme donor immunoassay (CEDIA)
    - 2.3. Ion-selective electrodes (ISEs)
    - 2.4. Reverse transcriptase-polymerase chain reaction (RT-PCR)

3. Give a critical account of the available methods for measuring creatinine in serum and calculating estimated glomerular filtration rate (eGFR). Include considerations of pre-analytical factors, calibration, and interferences.

**OR**

Give an account of electrophoresis with principles and applications. Compare the advantages and disadvantages of capillary electrophoresis and conventional gel electrophoresis.

4. You have been approached by the Ministry of Health to consider introducing a screening programme for neonatal hypothyroidism at national level. Discuss the factors that you would take into account in deciding whether this would be worthwhile and how it could be implemented.

**OR**

Discuss how quality indicators can be used to monitor and improve laboratory performance.

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**MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION –**  
**FEBRUARY 2015**

**Date :- 17<sup>th</sup> February 2015**

**Time :- 9.00 a.m. – 12.00 noon**

**PAPER II (Clinical)**

**All four questions to be answered.**

**Use a separate book for each of the four questions.**

**All questions carry equal marks.**

**Write legibly.**

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1. Write short notes on the clinical significance of **any three (03)** of the following :
    - 1.1. Troponins
    - 1.2. Thyroid stimulating hormone receptor antibodies (TRAB)
    - 1.3. Copper (Cu)
    - 1.4. Hepcidin
  
  2. Write short notes on **any three (03)** of the following:
    - 2.1. Cerebrospinal fluid (CSF) analysis in clinical chemistry
    - 2.2. Reye syndrome
    - 2.3. Refeeding syndrome
    - 2.4. Chylomicronaemia syndrome

Contd...../2-

3. Discuss the differential diagnosis and diagnostic pathway for hypercortisolism, including biochemical and imaging investigations.

**OR**

Discuss the differential diagnosis and diagnostic workup in a 40 year old woman complaining of tiredness and found to have hypercalcaemia.

4. A five year old boy is brought to the accident and emergency department after being found unconscious in the kitchen. Discuss the differential diagnosis and appropriate biochemical investigations.

**OR**

Describe the role of the kidney in maintaining hydrogen ion concentration in health. Discuss the pathophysiology of acidosis and alkalosis in disorders of the kidney.