

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) IN CHEMICAL PATHOLOGY EXAMINATION
APRIL, 1991

Date: 8th April 1991

Time: 2.00 p.m.-5.00 p.m.

PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Describe briefly the analytical principles for the measurement of any three of the following. (Include comments, where appropriate, on specimen collection, calibration and interfering substances).
 - 1.1. Serum total and conjugated bilirubin
 - 1.2. Serum albumin
 - 1.3. PO₂ in arterial blood
 - 1.4. Serum creatinine

2. Outline the basic analytical principles of any three of the following techniques:
 - 2.1. Nephelometry
 - 2.2. Iso-electric focussing
 - 2.3. Osmometry
 - 2.4. Atomic absorption spectrophotometry

3.
 - 3A. What factors should be considered when establishing an internal quality control program?
Discuss whether an external quality control program can substitute for an internal quality control program.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) IN CHEMICAL PATHOLOGY EXAMINATION
APRIL, 1991

Date: 9th April 1991

Time: 8.45 a.m. - 11.45 a.m.

PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Discuss briefly the significance and the clinical usefulness of the measurement of any three of the following
 - 1.1. Alpha-fetoprotein
 - 1.2. Glycosylated hemoglobin
 - 1.3. Urinary hydroxy methoxymandelic acid(HMMA) or vanillyl mandelic acid (VMA)
 - 1.4. C-reactive protein

2. Write short notes on any three of the following:
 - 2.1. Macroamylasaemia
 - 2.2. Anion gap
 - 2.3. Syndrome of Inappropriate secretion of ADH
 - 2.4. Creatinine clearance

3.
 - 3A. Discuss the pathophysiological changes in chronic renal failure

OR

 - 3B. Describe how plasma calcium is regulated. Outline a systematic approach in the investigation of a patient with hypercalcaemia.

4.
 - 4A. Discuss the investigation of a Patient having hyperthyroidism highlighting any recent developments.

OR

 - 4B. How would you investigate a patient suspected of having hypoglycemic attacks? How do you interpret the results of your investigations?

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) IN CHEMICAL PATHOLOGY EXAMINATION -
JANUARY, 1997

Date: 20th January 1997

Time: 2.00 p.m. - 5.00 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Describe briefly the analytical principles for the measurement of any three of the following: (Include comments, where appropriate, on specimen collection, calibration and interfering substances)
 - 1.1. Serum cholesterol
 - 1.2. Serum creatine kinase - MB isoenzyme
 - 1.3. Serum calcium
 - 1.4. Urinary albumin

2. Write short notes on any three of the following
 - 2.1. Turbidimetry
 - 2.2. Ion-selective electrodes
 - 2.3. Thin layer chromatography
 - 2.4. Polymerase chain reaction

3.
 - 3A. Describe and justify what biochemical tests you would offer after office hours.

OR
 - 3B. Describe the principles, advantages and uses of the various types of immunological assays used in a chemical pathology laboratory.

4.
 - 4A. Describe how you would improve efficiency in a Chemical Pathology laboratory.

OR
 - 4B. Discuss how pre-analytical factors may affect laboratory results and their interpretation (consider factors in the patient in taking samples, transportation, etc.).

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
JANUARY, 1997

Date: 21st January 1997

Time: 8.45 a.m.-11.45 a.m.

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Discuss briefly the clinical significance of any three of the following
 - 1.1 Myoglobin
 - 1.2 Chloride
 - 1.3 Porphobilinogen
 - 1.4 Synacthen test

1. Write short notes on any three of the following
 - 2.1 Dibucaine number
 - 2.2 Parathyroid hormone related peptide
 - 2.3 Beta human chorionic gonadotrophin
 - 2.4 Lipoprotein (a)

3.
 - 3A. Discuss the investigation of a patient with polyuria.

OR

- 3B. Discuss how the laboratory can help in the diagnosis and management of a 35 year old man with hypertension.

4.
 - 4A. Discuss the biochemical markers of bone metabolism and their potential use in the assessment patients with metabolic bone disease.

OR

- 4B. Describe and explain the metabolic consequences of prolonged vomiting.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION -
NOVEMBER, 1998

Date: 16th November 1998

Time: 2.00 p.m. - 5.00 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Describe briefly the analytical principles of any three of the following:
 - 1.1. Serum amylase
 - 1.2. Serum cholesterol
 - 1.3. Urinary protein
 - 1.4. Serum urea

2. Write short notes on any three of the following
 - 2.1 Extinction coefficient
 - 2.2. High dose hook effect
 - 2.3 Receiver operator characteristic curves
 - 2.4. Kinetic enzyme analysis

3. Discuss how you would proceed to establish the reference range for a given analyte in plasma or serum. What factors may influence the range?

OR

Discuss how drugs may affect the investigations done in a chemical pathology laboratory.

4. You are asked to design a new request form(s) to be used for biochemical investigations. I
Discuss the factors you would include in such a form(s).

OR

Discuss what factors should be taken into consideration to ensure laboratory safety in a chemical pathology laboratory.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION -
NOVEMBER, 1998

Date: 17th November 1998

Time: 9.00 a.m. - 12.00 noon

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Discuss briefly the clinical significance of any three of the following
 - 1.1. Prolactin
 - 1.2. Alpha foetoprotein
 - 1.3. Alkaline phosphatase
 - 1.4. Serum sodium

2. Write short notes on any three of the following
 - 2.1. Von Girke's disease
 - 2.2. Biochemical assessment of iron status
 - 2.3. Cryoglobulins
 - 2.4. Renal tubular acidosis

3. Discuss the role played by the chemical pathology laboratory in the management of a 75 year old man diagnosed to have a malignant disease

OR

Discuss the biochemical monitoring of a patient with diabetes mellitus.

4. How would you investigate a patient with nephrolithiasis?

OR

Write a critical account on the biochemical diagnosis of a acute myocardial infarction.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION –
NOVEMBER, 1999

Date: 15th November 1999

Time: 2.00 p.m. -5.00 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Each of the following analytes may be measured by more than one method. Describe briefly the analytical principles of two methods for the measurement of any three of the following: -
 - 1.1. Serum glucose
 - 1.2. Serum urate
 - 1.3. Serum magnesium
 - 1.4. Serum chloride

2. Write short notes on any three of the following
 - 2.1. The use of restriction endonucleases in mutation detection
 - 2.2. The use of the electrodes for measurement pH, PO₂ and PCO₂
 - 2.3. The use of amine buffers in measurement of serum alkaline phosphatase
 - 2.4. The advantages and disadvantages of measurement of a 24 hour urine analyte excretion versus a random urine analyte/creatinine ratio.

3.
 - 3.A Discuss "near patient testing" ("point of care testing") analysis. What role should the Chemical Pathology Department play in its use in a hospital.

OR

- 3.B. Your chemical Pathology Laboratory has purchased fully automated clinical chemical analyzers. As Chemical Pathologist, discuss how you would manage the transition from manual to automated technology.

- 4.
- 4.A. Outline the principles of electrophoresis and isoelectric focussing and discuss their applications in the Chemical Pathology Laboratory.
- OR
- 4.B. Write short notes on each of the following
 - 4.B.1. Provision of suitable water for the Chemical Pathology Laboratory.
 - 4.B.2. Provision of a steady, uninterrupted power supply for the Chemical Pathology Laboratory (electronic details are not needed).
 - 4.B.3 Give indications for the use of different grades of solvent and discuss the disposal of used solvents.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
NOVEMBER, 1999

Date: 16th November 1999

Time: 9.00 a.m. -12.00 noon

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Discuss briefly the clinical significances of the measurement of any three of the following ,
 - 1.1. Urine albumin
 - 1.2. Plasma parathormone
 - 1.3. Serum gamma glutamyl transferase
 - 1.4. Plasma homocysteine

2. Write short notes on any three of the following.
 - 2.1. Sick euthyroid syndrome
 - 2.2. Syndrome of inappropriate anti diuretic hormone secretion
 - 2.3. Alpha-1 antitrypsin deficiency
 - 2.4. Tumor lysis syndrome

3.
 - 3.A. There has been a great deal of discussion in the recent literature of investigation and management of patients with chest pain in emergency medical care units.
Discuss the role of the Chemical Pathology Department in diagnosis and management of such patients in emergency units.

OR

- 3.B. Diagnostic criteria for diabetes mellitus have been changed recently. What are these changes and what is their likely diagnostic impact? What events prior to or during an oral glucose tolerance test may affect its results?

4.

4.A. A sixty-year-old male presents with back pain. Serum calcium is found to be 3.90 mmol/L. Discuss the differential diagnosis. How can the Chemical Pathology Department help with establishing the definitive diagnosis?

OR

4.B. A forty year old man had been taking' traditional medicine for diarrhea. The diarrhea improved but his condition deteriorated and he became weak and anemic. A blood film showed stippling of red cells. What is a likely diagnosis? How may the Chemical Pathology Department aid the establishment of a definitive diagnosis?

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
DECEMBER, 2003

Date: 9th December, 2003

Time: 1.30 p.m.-4.30 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Summarise the analytical principles for the measurement for any three of the following. Where appropriate, include comments on specimen collection, calibration and interfering substances.
 - 1.1. Creatinine in plasma
 - 1.2. Occult blood in faeces
 - 1.3. Sodium in plasma
 - 1.4. Ketone bodies in urine

2. Write short notes on any three of the following.
 - 2.1. Osmometry
 - 2.2. Polymerase chain reaction
 - 2.3. Nephelometry
 - 2.4. Chemiluminescence immunoassay

3. EITHER
 - A. Discuss the factors that you would take into account in introducing a new method for an analyte that is already part of the repertoire of a chemical pathology laboratory.

OR

- B. Discuss how you would set up an out of hours' chemical pathology service in a new building being constructed in an existing general hospital.

4. EITHER

- A. Discuss the consequences for the staff of introducing automated equipment into a chemical pathology laboratory.

OR

- B. A complaint has been received from the physician in charge of the Diabetic Clinic in a Base Hospital, stating that the plasma glucose values issued from the laboratory are inaccurately low. As the Head of the laboratory, how would you investigate and respond to this complaint ?

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION –
DECEMBER, 2003

Date: 10th December, 2003

Time: 9.00 a.m.-12.00 noon.

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Summarise the clinical importance of the measurement of any three of the following
 - 1.1 Troponin I
 - 1.2 Insulin-like growth factor 1 (Somatomedin C)
 - 1.3 Free PSA (Prostate specific antigen)
 - 1.4 Ferritin

2. Describe the physiological basis of any three of the following tests.
 - 2.1 Short ACTH (Synacthen) stimulation test
 - 2.2 Water deprivation test
 - 2.3 Urinary acidification test
 - 2.4 Lactose tolerance test

3. How may biochemical investigations assist in the diagnosis of an adult presenting with acute abdominal pain ?

OR

How can biochemical investigations assist in the management of adult patients admitted to hospital unconscious for no obvious reason ?

4. What are the mechanisms that can lead to the development of severe hyponatraemia (plasma $[Na^+] < 120$ mmol/l) ?
How should patients with this condition be investigated ?

OR

Discuss the biochemical investigation of a child of eight years of age, with short stature.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION –
DECEMBER, 2004

Date: 6th December, 2004

Time: 1.30 p.m.-4.30 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Give the analytical principles for the measurement for any three of the following. Where appropriate, include comments on specimen collection, calibration and interfering substances.
 - 1.1 Serum uric acid
 - 1.2 Urinary protein
 - 1.3 Serum total calcium
 - 1.4 Glycated haemoglobin

2. Write short notes on any three of the following.
 - 2.1 Turbidimetry
 - 2.2 Immuno radiometric assay
 - 2.3 Isoelectric focusing
 - 2.4 Real time polymerase chain reaction (RT - PCR)

3. Either

A complaint has been received from the paediatrician, stating that the serum bilirubin values are inaccurate over the past few months. Describe in detail how you would investigate and correct this problem.

OR

Describe how you would set up and run a national external quality assessment programme for thyroid function tests.

4. Either

Describe the principles and the applications of photometry in a Chemical Pathology laboratory.

OR

Discuss how you would proceed to establish the reference range for given analyte in plasma or serum.

What factors may influence the reference range ?

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION –
DECEMBER, 2004

Date: 7th December, 2004

Time: 9.00 a.m.-12.00 noon.

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Give the clinical importance of the measurement of any three of the following.
 - 1.1 C-reactive protein
 - 1.2 Lipoprotein (a)
 - 1.3 Sex hormone binding globulin
 - 1.4 Urinary osmolality

2. Write short notes on any three of the following.
 - 2.1 Paracetamol poisoning
 - 2.2 Rhabdomyolysis
 - 2.3 Metabolic syndrome (Syndrome X)
 - 2.4 Renal tubular acidosis

3. Outline the endocrine disorders, which may present as medical emergencies. Which assay services should be available urgently for such emergencies?

OR

A 40 year old man has a blood pressure of 180/110 and his serum potassium is 2.8 mmol/L. Discuss the differential diagnosis and describe further investigation of the patient.

4. Discuss the role of tumour markers in the diagnosis and management of disorders of
- a) thyroid
 - b) prostate

OR

Discuss critically the assessment of the glomerular filtration rate in clinical practice.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
DECEMBER, 2005

Date: 12th December, 2005

Time: 1.30 p.m.-4.30 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Describe the analytical principle of one method for the measurement of any three of the following. Where appropriate, include comments on specimen collection, calibration and interfering substances.
 - 1.1 Serum magnesium
 - 1.2 Plasma glucose
 - 1.3 Partial pressure of oxygen in arterial blood
 - 1.4 Cortisol in serum

2. Write short notes on any three of the following.
 - 2.1 Osmometry using freezing point measurement
 - 2.2 Fluorescence polarization immunoassay
 - 2.3 Gel electrophoresis
 - 2.4 Restriction fragment length polymorphism

3. EITHER

Describe the factors you would need to consider for instituting an internal quality control programme in a chemical pathology laboratory.

OR

Outline the selection criteria you would apply when deciding to purchase a piece of new equipment for your laboratory. Illustrate your answer using an automated chemistry analyzer as an example.

4. EITHER

The WHO has predicted an increase in the incidence of diabetes mellitus in South East Asia. Discuss the implications of this for the provision of chemical pathology services in Sri Lanka.

OR

Discuss the analytical principles, advantages and disadvantages of near-patient biochemical testing.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(PATHOLOGY) HISTOPATHOLOGY EXAMINATION –
DECEMBER, 2005

Date: 13th December, 2005

Time: 9.30ap.m. - 12.30 p.m.

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Give the clinical importance of the measurement of any three of the following.

- 1.1 Alkaline phosphatase
- 1.2 Ghrelin
- 1.3 HDL cholesterol
- 1.4 Carcinoembryonic antigen (CEA)

2. Write short notes on any three of the following.

- 2.1 Lead poisoning
- 2.2 Galactosaemia
- 2.3 Malignant hyperthermia
- 2.4 Pseudothyponatremia

3. EITHER

Discuss the pathogenesis, biochemical monitoring and management of osteoporosis in an adult.

OR

Discuss the role of biochemical investigations in the diagnosis and management of suspected acute myocardial infarction.

4. EITHER

Give an account of diseases caused by end organ resistance.

OR

Discuss the biochemical investigation of an adult presenting with clinical features of chronic liver disease.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
DECEMBER, 2006

Date: 5th December, 2006

Time: 1.00 p.m.- 4.00 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Describe the analytical principle of one method for the measurement of any three of the following. Where appropriate, include comments on specimen collection, calibration and interfering substances.
 - 1.1 Serum Creatinine
 - 1.2 Serum Calcium
 - 1.3 Urinary Protein
 - 1.4 Serum Creatine kinase – MB isoenzyme

2. Write short notes on any three of the following.
 - 2.1 Receiver-operator characteristic curves
 - 2.2 Molar absorptivity
 - 2.3 Thin-layer chromatography
 - 2.4 Enzyme Multiplied Immunoassay

3. Discuss the steps you would take before you introduce a new test into the laboratory.

OR

Describe the audit cycle.
Discuss with examples the role of audit in improvement of the quality of chemical pathology services.

4. Discuss the method for the assessment of free hormones.

OR

Give a critical account of the methods available for the measurement of low density lipoprotein cholesterol in serum.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
DECEMBER, 2006

Date: 6th December, 2006

Time: 9.00 a.m.- 12.00 noon.

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Give the clinical importance of the measurement of any three of the following :

- 1.1 Serum osmolality
- 1.2 Human chorionic gonadotrophin
- 1.3 Serum transferrin saturation
- 1.4 Homocysteine

2. Write short notes on any three of the following.

- 2.1 Monoclonal gammopathy of unknown significance
- 2.2 Non-alcoholic steatohepatitis
- 2.3 Fanconi Syndrome
- 2.4 Organophosphate poisoning

3. A one-month-old baby was transferred to a paediatric hospital for further management of recurrent convulsions. The baby's random plasma glucose was 1.7 mmol/L.

Discuss the differential diagnosis. How can the chemical pathology laboratory help to establish the definitive diagnosis ?

OR

A 64-year-old female was transferred to a tertiary care hospital with a serum sodium level of 115 mmol/L.

Discuss the differential diagnosis and the role played by the chemical pathology laboratory in the management of this patient.

4. Critically discuss the chemical pathology services that should be available for the investigation of patients with subfertility and the management of treatment options offered to them.

OR

Discuss the methods for the assessment of nutritional status.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
JANUARY 2009

Date: 12th January 2009

Time: 1.00 p.m.- 4.00 p.m.

THEORY PAPER I

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Describe the analytical principles of one method for the measurements of any three of the following. Where appropriate, include comments on specimen collection, calibration, interfering substances and other relevant pre-analytical factors.
 - 1.1. Glycated haemoglobin. (HbA_{1c}).
 - 1.2. Actual HCO₃.
 - 1.3. Serum creatinine.
 - 1.4. Serum alkaline phosphatase.

2. Write short notes on any three of the following.
 - 2.1. Chemiluminescence
 - 2.2. Atomic absorption spectrophotometry
 - 2.3. Water purification
 - 2.4. Functional sensitivity

3. EITHER

Sri Lanka has been offered a WHO grant to set up a pilot neonatal screening programme in 2 provinces for a 3 year period.

Describe how you will implement the project and what principles will guide you in deciding what tests to include and how you will evaluate the pilot programme in such a way as to advise the government on whether such screening should be continued as a national health priority.

OR

Discuss the pre-analytical problems encountered in the biochemical assessment of various sample types in neonatal patients.

4. EITHER

Discuss the role of endocrine tests in the evaluation of suspected disorders of growth hormone production.

OR

Give a critical account of the methods available for the measurement of high-density lipoprotein cholesterol in serum.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
JANUARY 2009

Date: 13th January 2009

Time: 9.00 a.m.- 12.00 noon.

THEORY PAPER II

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly

1. Give the clinical importance of the measurement of any **three** of the following.
 - 1.1. Alpha fetoprotein (AFP)
 - 1.2. Insulin
 - 1.3. Renin
 - 1.4. Prostate specific antigen (PSA)

2. Write short notes on any **three** of the following.
 - 2.1. Syndrome of inappropriate anti-diuretic hormone secretion (SIADH)
 - 2.2. Alpha-1 anti-trypsin deficiency
 - 2.3. Abetalipoproteinaemia
 - 2.4. Thyrotoxicosis in pregnancy

3. EITHER

A 40-year-old male presented with a clinical history of muscle weakness. His serum potassium was 2.2 mmol/L. List the possible causes for hypokalaemia and discuss the role of the chemical pathology laboratory in confirming or excluding them.

OR

A 35-year-old female was transferred to a tertiary care hospital with a serum calcium level of 1.8 mmol/L. Discuss the differential diagnosis and the role played by the chemical pathology laboratory in arriving at a definitive diagnosis.

4. EITHER

Discuss the role of the chemical pathology laboratory in the screening, staging and management of patients with chronic kidney disease.

OR

Discuss the role of the chemical pathology laboratory in the investigation and management of an infertile couple.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
NOVEMBER/DECEMBER 2009

Date: 30th November 2009

Time: 1.00 p.m.- 4.00 p.m.

PAPER I (Analytical)

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly.

1. Describe the analytical of **one** method for the measurement of any **three** of the following, making sure to select three **different** analytical types of methods. Where appropriate, include comments on specimen collection, calibration, interfering substances and other relevant pre-analytical factors.
 - 1.1. C-reactive protein
 - 1.2. Angiotensin-converting enzyme
 - 1.3. High-density lipoprotein (HDL) cholesterol
 - 1.4. Porphobilinogen in urine

2. Write short notes on any three of the following
 - 2.1. Beer-Lambert Law and Spectrophotometry
 - 2.2. Difference between Nephelometry and Turbidimetry
 - 2.3. High-performance liquid chromatography (HPLC)
 - 2.4. Westgard Rules and their utility in a quality control programme

3. You have been newly appointed as the Chemical Pathologist of a hospital laboratory which is not accredited by the Sri Lanka Accreditation Board. How would you set about getting your Chemical Pathology laboratory accredited within one year ?

OR

How would you introduce a quality control system for near-patient testing devices and ensure that the assays are kept in control and that appropriate records of the results are maintained ?

4. Outline general principles and strategies that can be utilized in the process of selecting a suitable assay. How do you apply these principles to critically evaluate available methods and select one assay for HbA1c (glycosylated haemoglobin) in your laboratory.

OR

N-acetyl cysteine given as the antidote for paracetamol poisoning has its own disadvantages. In order to avoid unnecessary use of it, the hospital authorities requested the Chemical Pathology department to give paracetamol levels of patients before the decision is taken to give the antidote. Discuss how you would handle this request in a Teaching Hospital.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
NOVEMBER/DECEMBER 2009

Date: 2nd December 2009

Time: 9.00 a.m.- 12.00 noon.

PAPER II (Clinical)

All Four Questions to be answered

All Questions carry equal marks.

Use a separate book for each question

Write legibly.

1. Give the clinical importance in the measurement of any three of the following.

- 1.1. Free light chains
- 1.2. Bilirubin
- 1.3. Prolactin
- 1.4. B hCG

2. Write short notes on any three of the following.

- 2.1. Haemochromatosis
- 2.2. Insulin resistance
- 2.3. Biochemical changes in normal pregnancy
- 2.4. Phenylketonuria

3. Discuss the biochemical investigations that may be utilized to assess the cardiovascular risk.

OR

Compare and contrast Troponin T and I with CK-MB as a marker on myocardial infarction.

4. Discuss the pathophysiology and biochemical investigation of a patient with renal calculi.

OR

Discuss the choice and interpretation of investigations performed by the Chemical Pathology laboratory in the diagnosis and management of different forms of thyroid disease. Include the problems associated with their use and interpretation in your discussion.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
JANUARY 2011

Date: 24th January 2011

Time: 1.00 p.m.- 4.00 p.m.

PAPER I (Analytical)

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly.

1. Describe the analytical principles for the measurement of any **three (03)** of the following analytes, making sure to select different analytical methods. Where appropriate, include comments on specimen collection, calibration, interfering substances and other relevant pre-analytical factors.
 - 1.1. Creatine kinase (one method)
 - 1.2. Low-Density Lipoprotein Cholesterol (LDL-C)(two methods)
 - 1.3. Microalbumin (one method)
 - 1.4. Urea (two methods)

2. Write short notes on any **three (03)** of the following.
 - 2.1. Blood glucose meter (Glucometer)
 - 2.2. Capillary electrophoresis.
 - 2.3. Immunometric (labeled antibody) assays.
 - 2.4. Bland and Altman plots.

3. Discuss the analytical issues of relevance in the measurement of cardiac troponins in plasma, addressing standardization, analytical interferences and limit of qualification / detection limits.

OR

Describe how you would determine the reference interval for a new laboratory test. What statistical methods need to be considered in setting the intervals ? Illustrate your answer with examples.

4. Your Chemical Pathology laboratory at General Hospital, Ratnapura has got approval from the Ministry of Health for a fully-automated chemiluminescence immunoassay system on the basis that you pay the reagent cost only. What are the implications of such an agreement ? How would you use your analyser to provide thyroid function test services to the entire Sabaragamuwa Province, assuring total quality ?

OR

Compare and contrast the principles of Internal Quality Control (IQC) and External Quality Assessment (EQA).

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PATHOLOGY) CHEMICAL PATHOLOGY EXAMINATION
JANUARY 2011

Date: 25th January 2011

Time: 9.00 a.m.- 12.00 noon.

PAPER II (Clinical)

All Four Questions to be answered
All Questions carry equal marks.
Use a separate book for each question
Write legibly.

1. Discuss the clinical importance in the measurement of any **three** (03) of the following.
 - 1.1. Macroprolactin
 - 1.2. Chloride
 - 1.3. C-reactive protein (CRP)
 - 1.4. HbA_{1c}

2. Write short notes on **any three** (03) of the following.
 - 2.1. Familial hypercholesterolaemia
 - 2.2. Thyroid hormone resistance
 - 2.3. Estimated GFR by MDRD formula
 - 2.4. Medium-chain acyl-CoA dehydrogenase deficiency.

3. Discuss the use of endocrine tests that are needed in the investigation of an 8- year-old girl with short stature.

OR

Discuss the investigation and management of suspected glucocorticoid excess.

4. Discuss the differential diagnosis and the laboratory investigation of a 38-year-old male with a serum alanine transaminase (ALT) level greater than three times the upper reference limit of normal.

OR

Discuss the differential diagnosis and investigations of a male patient aged 60 years with a serum phosphate concentration of 0.4 mmol/L.