

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (CHEMICAL PATHOLOGY) EXAMINATION – JULY 2020

Date :- 6th July 2020

Time :- 1.00 p.m. – 4.00 p.m.

PAPER I (Analytical)

All four (04) questions to be answered.

Use a separate book for each of the **four (04)** questions.

All questions carry equal marks.

Write legibly.

1. Describe analytical principles of measurement method(s) of any three (03) of the following.
Mention sample collection requirements, interferences and advantages where relevant.
 - 1.1. Serum lithium (02 methods)
 - 1.2. HbA1c (02 methods)
 - 1.3. Serum bile acid (01 method)
 - 1.4. Urine free cortisol (02 methods)

2. Write short notes on any three (03) of the following:
 - 2.1. Sigma metrics
 - 2.2. Clinical audit
 - 2.3. Medical laboratory centrifuges
 - 2.4. Biosensors

3. Molecular diagnostic techniques are increasingly becoming popular in medical diagnostics. One such technique is rt-PCR (real time polymerase chain reaction).

Explain the principle of rt-PCR and mention its applications in identification and quantification of targets of interests. Briefly describe how it differs from conventional and digital droplet PCR.

OR

Many biochemical determinations are based on measurement of radiant energy under controlled conditions.

Describe principles, different modes and instrumentation used in such measurements.

4. You are assigned the task of establishing a laboratory for therapeutic drug monitoring.

Describe how you would proceed with this task giving special emphasis to layout, equipment, human resource and information management.

OR

Describe how biotin (vitamin B7) may affect the results produced by immunoassays and discuss the clinical significance of this analytical interference

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MD (CHEMICAL PATHOLOGY) EXAMINATION – JULY 2020

Date :- 7th July 2020

Time :- 9.00 a.m. – 12.00 noon

PAPER II (Clinical)

All four (04) questions to be answered.

Use a separate book for each of the four (04) questions.

All questions carry equal marks.

Write legibly.

1. Write short notes on clinical significance of any three (03) of the following:

- 1.1. Porphyrinuria
- 1.2. Procalcitonin in COVID-19
- 1.3. H-FABP (Heart specific fatty acid binding protein)
- 1.4. Faecal elastase

2. Write short notes on any three (03) of the following:

- 2.1. Biochemical complications of amiodarone therapy
- 2.2. Calcium sensing receptor disorders
- 2.3. Tumour lysis syndrome
- 2.4. Methaemoglobinaemia

3. Tabulate the mechanism of action and metabolic side effects of commonly used diuretics. Briefly describe the pathology and treatment of Bartter's, Gitelman's and Liddle's syndromes.

OR

Discuss the differential diagnosis and investigation of a high plasma glycine in a neonate.

4. A 28-year-old lady presents with infertility and oligomenorrhoea. The general practitioner suspects polycystic ovarian syndrome (PCOS) and calls you to discuss further testing. Discuss the clinical and biochemical features of hyperandrogenism as well as the differential diagnoses.

OR

A 32-year-old man is found, during a private health screen, to have an alanine aminotransferase (ALT) activity 3-times higher than the local upper reference limit.

Plan a logical course of investigation for this (including non-biochemical investigations where appropriate) and explain the rationale underlying this.