



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2009/2010

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (MEDICAL LABORATORY)

HML 308: ANALYTICAL TECHNIQUES

DATE: Monday, 28th December, 2009

TIME: 11.00 a.m. – 1.00 p.m.

INSTRUCTIONS:

SECTION A:

Attempt **ALL** questions. (10 marks each)

- Q.1 Describe the various methods used to interpret the results of protein electrophoresis (10 marks)
- Q.2` a) Describe the standard operating procedure (SOP) for oval glucose tolerance test (OGTT) (5 marks)
- b) Briefly describe the pre – analytical errors in specimen handling and processing that would compromise the quality of laboratory results. (5 marks)
- Q.3 a) Describe the characteristics of a good reagent kit (3 marks)
- b) Outline the advantages of automation in clinical laboratory and mention three factors that necessitated its introduction. (4 marks)
- c) Match the analysis given in column A with respective analytical methods given in column B.

COLUMN A

- Blood glucose
- ALT
- CA 125
- Albumin
- Uric acid
- BUN

COLUMN B

- I.F.C.C. standard method
- Enzyme linked fluorescence assay
- Bromo Cresal given (BCG)
- Ber the lot
- Hexokinase
- Uricase/Peroxidase

(3 marks)

SECTION B:

Answer any **TWO** questions (20 marks each)

Q.4 Discuss:-

- a) Factors that govern the rate of enzyme catalyzed reactions (10 marks)
- b) Factors that affects enzyme levels in plasma/serum. (10 marks)

Q.5 You are a laboratory manager in a busy clinical laboratory in a public hospital. Discuss the mechanisms you would put in place to ensure acquisition of a good analytical machine. (20 marks)

Q.6 a) Differentiate between internal and external quality control programmes. (6 marks)

- b) The internal quality control (1Qc) results for AST for days 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 in the month of October 2009 were as follows:- (20, 15, 20, 20, 15, 20, 15, 25, 20 and S) U/L respectively.

The 1Qc range was (15 – 25) U/L.

- i) Determine the 1Qc target value (2 marks)
- ii) Determine the 1Qc 1SD (one standard deviation) (2 marks)
- iii) Determine the 1Qc standard deviation for each day and plot this on a levy Jenning's quality control chart provided. (6 marks)
- iv) What could be the possible causes and remedies for 1Qc results for day 10. (4 marks)