

2014

M.Sc.

1st Semester Examination

BIO-MEDICAL LABORATORY SCIENCE & MANAGEMENT

PAPER—BLM-102

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer Q. No. 1 and any three questions from the following.

- 1. Answer any ten of the following : 1×10**
- (a) What is standard ?
 - (b) Define GLP.
 - (c) What do you mean by false negative result ?
 - (d) What is reproductibility ?
 - (e) Write the full form of PERT.
 - (f) What do you mean by Critical path merge ?
 - (g) Who are the customer for a biomedical laboratory ?
 - (h) What is the thumb rule of quantitative qualitative analysis ?

(Turn Over)

- (i) Reject the result when 1 control measurement in a group exceeds the mean $+2S$ and other exceeds mean $-2S$ denotes :
 - (i) 4_1s ;
 - (ii) R_4s ;
 - (iii) $4Rs$;
 - (iv) 4_{1S} .
- (j) N in multirule QC procedure denotes :
 - (i) The mean number of control measurement available at the time a decision on control status ;
 - (ii) The mean number of standard measurement available at the time a decision on control status ;
 - (iii) Both (i) and (ii) ;
 - (iv) None of the above.
- (k) Scraps in QC means :
 - (i) Rejected data of a laboratory ;
 - (ii) Rejected results of a laboratory ;
 - (iii) Rejected papers of a laboratory ;
 - (iv) Rejected reagents of a laboratory.
- (l) Systematic Errors can be detected most efficiently by :
 - (i) Levy Henning plot ;
 - (ii) Cusum Chart ;
 - (iii) Westguard rule ;
 - (iv) All of the above.
- (m) 'Out of Control' :
 - (i) Reject the test values and do not report patient ;
 - (ii) Reject the control values and do not report patient ;
 - (iii) Reject Blank values and do not report patient ;
 - (iv) None of the above.

- (n) Pipetting of dH_2O should be done with :
- (i) Index finger only ;
 - (ii) Index finger with high surface area ;
 - (iii) Thumb finger only ;
 - (iv) Thumb finger only with high surface area.
- (o) Communication between workers and authority should be :
- (i) Unidirectional ;
 - (ii) Bidirectional ;
 - (iii) Multidirectional ;
 - (iv) None of the above.

2. (a) Control 1 has a mean of 200 mg/dL with SD = 4.0
Control 2 has a mean of 250 mg/dL with SD = 5.0
Prepare Control Charts and interpret results on the basis of 1_{2S} and 1_{3S} Rule violation of the following data :

Day	Control 1	Control 2
1	200	247
2	205	250
3	195	255
4	202	243
5	186	254
6	207	263
7	209	264
8	190	261
9	196	239
10	207	236

- (b) What is PDCA cycle? Show diagrammatically.

8+2

3. (a) The following haemoglobin level detected from blood by using following Newly prepared reagent and stock reagent :

Hb(gm/dL) Newly Prepared —
11, 11.5, 11, 11, 10.5, 11.5

Hb(gm/dL) Stock Reagent —
10, 11, 12, 11, 11, 13

Identify if any error is here and interpret your result.

- (b) How do you make the team for a TQM system ?
(c) Briefly describe the procedure of control serum preparation. 5+2+3

4. (a) In a group of patients presenting to a hospital emergency with abdominal pain, 30% of patients have acute appendicitis, 70% of patients with appendicitis have temperature greater than 37.5°C and 40% of patients without appendicitis have a temperature greater than this.

Calculate sensitivity and specificity.

- (b) How do you calibrate a micropipette ?
(c) What do you mean by external failure cost ?

$$(2\frac{1}{2} + 2\frac{1}{2}) + 3 + 2$$

5. (a) Describe different types of error arises in a laboratory and how will you rectify it.

- (b) Describe briefly interlaboratory programmes with special reference to proficiency testing. 5+5

6. (a) What is cost benefit analysis ?

- (b) Explain the criteria of NPV, BCR and IRP of cost benefit analysis.

- (c) Describe briefly the types of bio-medical laboratory on the basis of infrastructure and work facilities.

1+5+4