M.Sc. 2nd Semester Examination, 2012

BIOMEDICAL LABORATORY SCIENCE AND MANAGEMENT

PAPER—BMLSM-201(U-10)

Full Marks : 40

Time : 2 hours

Answer **all** questions

The figures in the right-hand margin indicate marks

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

Illustrate the answers wherever necessary

MODULE – I

1. Answer any *five* of the following : 1 × 5

(*a*) The presence of anisocytosis and poikilocytosis is reflected by the following red cell indicess.

(*i*) MCV

(*ii*) MCH

(*iii*) RDW.

(*b*) Which of the following hematologic test is not part of normal complete blood count

(*i*) Hematocrit

(*ii*) Hb

(*iii*) Platelet count

(*iv*) Reticulocyte count.

(*c*) Complete saturation of Hemoglobin oxygenation is found in

(*i*) T-form

(*ii*) R-form

(*iii*) H-form

(*iv*) Berts.

(*d*) Which of the following stains are classified Romanowsky stains.

(*i*) Brilliant cresyl blue

(*ii*) New methylene blue

(*iii*) Wright's stain.

(*e*) Clot removal is accomplished by which of the following system ?

(*i*) Anticoagulation

(*ii*) Fibrinolysis

(*iii*) Thrombosis.

(*f*) Fibrinogen is synthesized in

(*i*) Liver

(*ii*) Platelet

(*iii*) Plasma

(*iv*) Endothelium.

(*g*) Write the different peptide chain present in HbS.

(*i*) $\alpha_2\beta_2$

(*ii*) $\alpha_2\delta_2$

(*iii*) $\alpha_2 y_2$

(*iv*) None.

(*h*) Out of 1000 RBCs 57 are reticulocytes percentage of mature erythrocyte is

(*i*) 55·7%

(*ii*) 92·76%

(*iii*) 94·30%

(*iv*) 5·70%.

2. (*a*) Describe the tertiary and quarternary structure of hemoglobin A.

(*b*) "Fetal hemoglobin has higher oxygen affinity and a lower ρ_{50}" – Elaborate. 5 + 3

Or

Write the indications of following abnormal cells with diagram : 4 × 2

(*a*) Basophilic stippling

(*b*) Burr cells

(*c*) Howell Jolly body

(*d*) Target cells.

3. (*a*) Describe the genetic and molecular aspects of sickle cell anaemia with special reference to tactoid formation.

(*b*) If the genotype are $\beta^{\circ}\beta^{\circ}$, $\beta^{\circ}\beta$ or $\beta^{+}\beta^{+}$ what would be the consequences ? (2 + 2) + 3

Or

(*a*) If a patient's WBC count is $7{\cdot}0 \times 10^{9}$/L and 70% neutrophils are identified in leukocyte differential, the relative neutrophil count is 70%. Calculate absolute neutrophil count per μL of blood.

(*b*) What do you mean by corrected WBC count ?

(*c*) Describe the use of glycoprotein markegs in diagnosing lukaemia. 2 + 2 + 3

MODULE – II

4. Answer any *five* of the following : 1 × 5

(*a*) What is hydrops foetalis ?

(*b*) What is the application of electrical impedance in clinical haematology ?

(*c*) What is loci of the gene associated with G-6-PD deficiency ?

(*d*) What is Von-Willebrand disease ?

(*e*) What is floating calibrator ?

(*f*) What do you mean by L.E cell.

(*g*) Write the full form of NESTROF.

(*h*) Write the full form of TIBC.

5. (*a*) Mention the principle of cellulose acetate electrophoresis

(*b*) Show the different electrophoretic Hb variants pattern digramaticaly in case of normal, new born, HbC trait, HbSC disease.

(*c*) Discuss about the demerits of electrophoresis and stregths of HPLC for Hb detection. 2 + 2 + (2 + 2)

Or

(*a*) How HbA_{1c} is co-related with mean blood glucose level ?

(*b*) Describe the structural components of a typical automatic blood analyser diagrammetically. 3 + 5

6. Write short notes on : $3\frac{1}{2}+3\frac{1}{2}$

(*i*) PNH and its detection

(*ii*) Sideroblastic anaemia and its diagnosis.

Or

(*a*) Discuss briefly about different types of bleeding disorders.

(*b*) What is the purpose of Klener-Betke test ? 5 + 2
