M.Sc.
2014
2nd Semester Examination
BIOMEDICAL LABORATORY SCIENCE AND MANAGEMENT
PAPER—BLM-201 (UNIT-10)

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 all questions.

(Module — 1)

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

(a) Which one of the statement is true about haemoglobin:
   (i) One Molecule contains 1 atom of iron ;
   (ii) It has a low level in blood at birth compared with adult life ;
   (iii) It’s type is almost same in children and adults.

(Turn Over)
(b) Which of the following normally containing 10% of the total body iron:
   (i) transferrhin;
   (ii) Neutrophil;
   (iii) Maenophag.

(c) Which of the following is not true about sideroblastic anaemic:
   (i) Ring sideroblast in bone marrow;
   (ii) It is most frequently caused by myelodysplasia;
   (iii) It may be caused by folate deficiency.

(d) Which one of the following is used to monitor transfusion iron overload:
   (i) Serum ferritin;
   (ii) Lung function;
   (iii) Haemoglobin content.

(e) Complete saturation of oxygenation is found in:
   (i) T-form;
   (ii) R-form;
   (iii) HbF.
(f) Henostasis correlates with:
   (i) Thrombocytes;
   (ii) Lymphocytes;
   (iii) Normocytes.

(g) Truth that Sickle cell anaemia is:
   (i) Glutamic acid replaced by valine;
   (ii) at the β6 perition valine is replaced by glutamine;
   (iii) West Bengal is a high prevalence state.

(h) Sodium fluoride is used as:
   (i) anticoagulant;
   (ii) preservative that prevents red cell lysis;
   (iii) to prevent glycolysis in red cell.

2. (a) Describe the merits of HbF over HbA with justification.

   (b) Describe the primary, secondary and tertiary structure of globin chains in haemoglobin. 4+4

   Or

   Describe the significance of the following types of red cells with a clean diagram: 4×2

   (a) Anisocytes;

   (b) Poikilocytes;

   (c) Basophilic strippling;

   (d) Target cells.
3. (a) What is crises?
   
   (b) State the mechanism of destruction of RBC in sickle cell anaemic patient;
   
   (c) What is the significance of red cell indices determination? 2+3+?

   Or

   (a) State the role of hepcidin in the regulation of erythropoiesis.
   
   (b) What is multiple myeloma?
   
   (c) Classify the types of Beta thalassemia focusing its haemoglobin variants and genetic feature. 2+1+(2+2)

   (Module — 2)

4. Answer any five questions from the following: 5×1

   (a) What is haemochromatosis?
   
   (b) Write the full form of RDW.
   
   (c) What is favism?
   
   (d) Why are males mostly affected by G-6-PD deficiency than female?
   
   (e) What is the normal value MCV?
   
   (f) What is the size of the aperture in a coulter-counter chamber?
(g) What do you mean by microcytic hypochromic anaemia?

(h) What is meant by thromocytopenia?

5. (a) Describe the principle of light scattering system with special reference to FACS for the measurement of different types of blood cells.

(b) What is the function of floating calibrator in Coulter-countering chamber?  

Or

(a) How do you interpret your result of paper electrophoresis in the detection of haemoglobin variants.

(b) How HBA1C is formed?

(c) Mention the principle of HbA1C detection by HPLC.  

6. (a) Describe why osmotic fragility test is performed.

(b) How do you interpret your test result of osmotic fragility?

(c) Mention the significance of reticulocyte count.

Or

3+2+2

(C/14/M.Sc./2nd Seme./BLM-201(U-10))
Write short notes on:

(a) Sideroblastic anaemia;
(b) Total iron binding capacity;
(c) Hemophilia. 3+2+2