

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) transferrin ;
 - (ii) Neutrophil ;
 - (iii) Macrophage.
- (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) Hemostasis correlates with :

- (i) Thrombocytes ;
- (ii) Lymphocytes ;
- (iii) Normocytes.

(g) Truth that Sickle cell anaemia is :

- (i) Glutamic acid replaced by valine ;
- (ii) at the β_6 position 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 stippling ;
- (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+2

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-counter chamber ? 6+2

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. 3+3+2
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. 3+2+2

Or

Write short notes on :

- (a) Sideroblastic anaemia ;
- (b) Total iron binding capacity ;
- (c) Hemophilia.

3+2+2
