

PARUL UNIVERSITY
PARUL INSTITUTE OF APPLIED SCIENCES
MID SEMESTER INTERNAL EXAMINATION, MARCH 2020
B. Sc. Forensic Science Semester IV

Paper Name: Advanced Biology

Date: 04/03/2020

Paper Code: 11107253

Time: 1hr 30min

Max. Marks: 40

Instructions:

1. All questions are compulsory and options are given in first and second question only.
 2. Numbers to the right of question indicate the marks of respective question.
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Q. 1 Attempt **any one** question of the following. **(08)**

- (i) Explain the different colorimetric assays used for presumptive identification of blood in detail.
- (ii) Explain the biosynthesis of Antigens O, A, B and AB in detail.

Q. 2 Attempt **any three** questions of the following. **(12)**

- (i) Explain any 4 physical properties of blood.
- (ii) Explain the confirmatory assays used for identification of blood.
- (iii) Describe how an immunochromatographic membrane device works (Basic mechanism of Immunochromatographic assay).
- (iv) How is Reverse typing of blood performed? Explain Reverse typing of blood for all the 4 blood types; A, B, AB and O.
- (v) Write a note on the strength of Ag-Ab binding.

Q. 3 Do as directed. Attempt **all five** questions. **(05)**

- (i) Define Circulatory system.
- (ii) What does forward typing of blood mean/indicate?
- (iii) Which principles are followed during the inheritance of A and B alleles?
- (iv) What is the difference between Plasma and Serum?
- (v) Name the curve that can be plotted for determining the amount of precipitate formed and mention the names of its 3 zones.

Q. 4 Write correct option in your answer sheet for following 15 multiple choice questions. **(15)**

MCQ 1 The process of formation of red blood cells in red bone marrow is called

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|--------------------|--------------------|
| (A) Erythropoiesis | (B) Leucopoiesis |
| (C) Polycythaemia | (D) Erythrocytosis |

MCQ 2 Which of the following produce heparin?

- | | |
|-----------------|---------------|
| (A) Neutrophils | (B) Basophils |
| (C) Eosinophils | (D) Monocytes |

- MCQ 3 The physiologically important pathway of blood coagulation is the
- (A) Intrinsic pathway (B) Contact activation pathway
(C) Extrinsic pathway (D) None of the above
- MCQ 4 The antigen binding activity is located within the fragment.
- (A) Fab (B) Fc
(C) Both (D) Constant domain
- MCQ 5 A false positive blood test may be caused by:
- (A) Household cleaning agents (B) Certain vegetables
(C) Reductants (D) Both A and B
- MCQ 6 High-dose hook effect involves a very high concentration of
- (A) Antibody (B) Antigen
(C) Both (D) None of the above
- MCQ 7 A, B, and O blood group antigens are
- (A) Glycolipids (B) Glycoproteins
(C) Lipids (D) Proteins
- MCQ 8 is the most abundant immunoglobulin in serum.
- (A) IgA (B) IgD
(C) IgG (D) IgE
- MCQ 9 antibodies are not applicable for precipitation and agglutination assays as they react with only a single epitope of a multivalent antigen and therefore cannot form cross-linked networks.
- (A) Monoclonal (B) Polyclonal
(C) Complete (D) Incomplete
- MCQ 10 bonds are formed during Antigen-Antibody binding.
- (A) Covalent (B) Non-covalent
(C) Ionic (D) None of the above
- MCQ 11 Which of the following is true for a primary binding reaction?
- (A) Binding between a single epitope of an antigen and a single binding site of an antibody
(B) Binding between a single epitope of an antigen and bivalent binding sites of an antibody
(C) Binding between multiepitope of an antigen and a single binding sites of an antibody
(D) Binding between a multiepitope of an antigen and bivalent binding sites of an antibody

- MCQ 12 reflects the sum of the binding affinities of all the binding sites of antigens and antibodies.
- (A) Affinity (B) Avidity
(C) Cross-reactivity (D) None of the above
- MCQ 13 Which of the following involves excess antigen?
- (A) Initial phase (B) Prozone
(C) Zone of Equivalence (D) Postzone
- MCQ 14 Some antibodies have 2 active Ag binding sites but cannot bridge the distance between cells, thus failing to form cross-linked complex/lattice.
- (A) Agglutinins (B) Complete
(C) Incomplete (D) Precipitins
- MCQ 15 The large antibodies produce agglutination much more easily than IgG.
- (A) IgA (B) IgM
(C) IgE (D) IgD

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