Biochemistry-N
Imm & Pathology

QP Code : 12790 8110

(2½ Hours) [Total Marks : 75

N.B. : (1) **All** the questions are **compulsory**. Choice is **internal.**
(2) **Figures** to the **right** indicate **full** marks.
(3) **All** questions carry **equal** marks.
(4) Draw **flowcharts/diagrams** wherever **necessary**.

1. (A) Fill in the blanks (any **three**) :— 3

(i) _____immunity is the less specific component of immune system.
(a) Innate (b) Adaptive (c) Humoral

(ii) The _____ have a multilobed nucleus.
(a) Basophils (b) Neutrophils (c) Eosinophils

(iii) Activation of_____ cells play a central role in activation of cell mediated and humoral immunity.
(a) T_C (b) T_S (c) T_H

(iv) The well accepted theory to explain specificity of antibodies is _____
(a) Clonal selection (b) Selective (c) Instructional

(v) Adaptive immunity is of the following type _____
(a) Active & Inactive (b) Active & Passive (c) Active & Antagonistic

(vi) _____ comprise a group of proteins produced by virus infected cells.
(a) Lysozymes (b) Interleukins (c) Interferons

(B) Explain the following (any **one**) :— 2
(i) Phagocytosis (ii) Anatomical barriers of immune response

(C) Answer the following (any **one**) :— 4
(i) Cytokines (ii) Antigen Presenting Cells

(D) Elaborate on (any **one**) :— 6
(i) Secondary lymphoid organs
(ii) Humoral and Cell mediated immunity

2. (A) Fill in the blanks (any three) :— 3

(i) On electrophoretic separation, antibodies are found in _____globulin.
(a) γ (b) α (c) β

(ii) The light chain of an antibody could be _____ chains.
(a) κ and λ (b) α and β (c) α and γ

(iii) The antibody to exist in a pentameric state is _____
(a) Ig G (b) Ig D (c) Ig M

(iv) Mercaptoethanol helps in reduction of _____ bonds.
(a) Disulphide (b) Carbon (c) Protein

(v) Igs present on an unstimulated B cell are_____
(a) IgM and IgD (b) IgG and IgE (c) IgG and IgA

(vi) Expression of light chain requires rearrangement of _____gene segment.
(a) V and J (b) J and D (c) A and D

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(B) Define and Explain (any **one**) :— 2
(i) CDR (ii) Hinge region

(C) Write short notes on (any **one**) :— 4
(i) Rearrangement of heavy chain gene segment
(ii) Classes of antibodies

(D) Elaborate on (any **one**) :— 6
(i) Typical Structure of antibody
(ii) Factors affecting immunogenicity

3. (A) Fill in the blanks (any **three**) :— 3
(i) Inborn errors of metabolism are _____
(a) Infectious (b) Congenital (c) Composite
(ii) Reduced oxygen carrying capacity is also known as _____
(a) Anaemia (b) Avitaminosis (c) Fibrosis
(iii) Atherosclerosis leads to the formation of _____
(a) Plaque (b) Anaemia (c) Cellular waste
(iv) In Von Gierke's disease there is deficiency of _____
(a) Glucose-6-dehydrogenase,
(b) Glucose-6-phosphatase
(c) Glucose-6-aldolase
(v) Sickle cell anaemia occurs due to a defect in _____ genes.
(a) Altemative (b) Regulatory (c) Structural
(vi) The occurrence of iron deficiency in anaemia is _____ thalassemia.
(a) Less than (b) More than (c) Equal to

(B) Explain the following (any **one**) :— 2
(i) Albinism (ii) Tay Sach's disease

(C) Write short notes on (any **one**) :— 4
(i) Enlist the biochemical features of Glycogen Storage Disease type I.
(ii) Explain factors increasing the chances of having atherosclerosis.

(D) Elaborate on (any **one**) :— 6
(i) Sickle cell anaemia (ii) Thalassemia

4. (A) Fill in the blanks (any **three**) :— 3
(i) Neoplastic growth of cell denotes _____
(a) Malnutrition (b) Malignancy (c) Malfunction
(ii) Benign tumours are characterized as _____
(a) Non capsulated (b) Capsulated (c) Flagellated
(iii) An endothelial tumour is _____
(a) Adenoma (b) Glioma (c) Toxinoma

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(iv) The study of cancer is _____
(a) Dermatology (b) Gerontology (c) Oncology

(v) Migration of cancer cells in the human body is known as _____
(a) Metakinetics (b) Metabolomics (c) Metastasis

(vi) Malignant tumours are _____
(a) Non-flagellated (b) Well organized (c) Disorganized

(B) Explain the following (any **one**) :— 2
(i) Carcinogen (ii) Cancer

(C) Write short notes on any **one** :— 4
(i) Progression of cancer
(ii) Therapy of Cancer

(D) Discus in detail the following (any **one**) :— 6
(i) Causes of malignancy
(ii) Physiology of a cancer cell

5. (A) Attempt any **one** of the following :— 3
(i) Characteristics of inflammation
(ii) Immunological memory

(B) Discuss in detail (any **one**) :— 3
(i) Monoclonal antibody
(ii) Epitope and paratope

(C) Explain the following (any **one**) :— 3
(i) Iron deficiency anaemia
(ii) Inherited metabolic disorder

(D) Answer any **one** of the following :— 3
(i) Causative factors of carcinogenicity (ii) Types of tumours

(E) State **true** or **false** (any **three**) :— 3
(i) NK cells do not have T cell receptors that can recognise antigen.
(ii) Sickle cell anaemia can be completely cured by intake of iron supplements.
(iii) Substances that can be recognized immunoglobulins are called antigens.
(iv) All mutagens are carcinogens.
(v) All immunogenic molecules are antigenic in nature.
(vi) Thalassemia can occur due to the deficiency of vitamin B_{12}.

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