

**Name :** Yasir Iqbal

**ID :** 14059

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**Exam :** Mid Term

**Paper** Immunology & Serology.

**Submitted to:** Mam Saima Hedi

Q NO# 1

parts (i)

Ans:

**immunology:** It is the study of immune system. The immune system protect us from infection through various lines of defence.

If it can not functioning result in disease, i.e. Allergy and cancer.

**Part (ii) Serology:** Sera  $\Rightarrow$  serum  
logy  $\Rightarrow$  study.

The study of medical Science dealing with blood serum and its immunological reaction.

refer to the diagnostic identification of antibodies in the serum.

these antibodies are formed in response to an infection.

(ii)

### Part (iii)

**Antibody:** These are protein

that release against antigen to destroy any harmful substance.

mainly produced by plasma cell

used to neutralized pathogens.

such as pathogenic bacteria and virus.

### Part: (iv)

**Antigen:** Antigen is a harmful

substances which enter the body and

causes the body to make antibodies

responses to fight off disease.

e.g. Cold virus which cause

which causes the body to make

antibodies and help to prevent

the person from getting sick.

## Q NO # 2

Ans:

### innate Immunity | Acquired Immunity

⇒ Also known as Native immunity.

⇒ innate immunity is already present in the body.

⇒ non-specific.

⇒ no memory cell.

⇒ Does not improved after exposure.

⇒ Limited and lower potency.

⇒ present prior to exposure to microbes.

⇒ also known as adaptive immunity.

⇒ Adaptive immunity is created in response to exposure to a foreign substance.

⇒ specific.

⇒ Long Term memory.

⇒ improved upon repeated exposure.

⇒ High potency.

⇒ occur after exposure of microbes.

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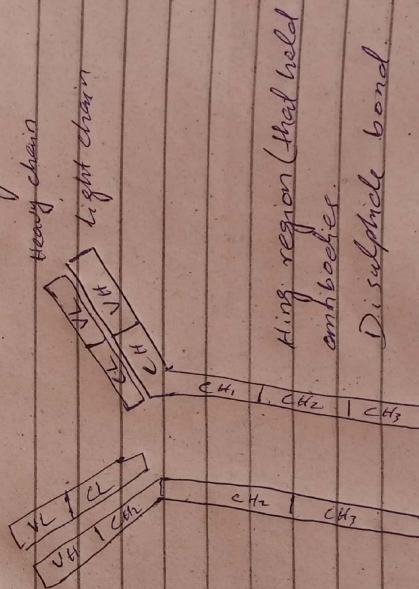
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### QNO # 3

**Ans: Immunoglobulin:** First we will discuss structure of immunoglobulin, types and function of immunoglobulin.

**Structure:** Antibodies are the gamma types of immunoglobulin. There are five types of antibodies but each of them contain two heavy chain and two light chain.



### Types:

There are five types of antibodies: IgG, IgA, IgM, IgE, IgD.

**IgG:** Most abundant type of antibodies present in human. Single unit antibody. Y shaped monomer. Molecular weight 150000.

(✓)

- ⇒ It is small antibody and can cross blood vessels and placenta.
- ⇒ Igh help in phagocytosis.

**IgD:-** The heavy chain in IgD is Delta.

- ⇒ molecular weight 180000
- ⇒ present in body in low concentration and no significant role in the body.
- ⇒ present on the surface of B-cell.

**IgA:-** Two form (i) monomeric → serum

- ⇒ (ii) Dimeric → secretion + J chain
- ⇒ IgA present in body secretion.
- ⇒ e.g. Tears, saliva, mother milk etc.
- ⇒ molecular weight is 170000
- ⇒ 15% of total immunoglobulin in serum.

**IgM:-** Largest immunoglobulin in the human

- ⇒ molecular weight is 190000
- ⇒ Most important immunoglobulin in Aggregation.
- ⇒ IgM is the first antibody which is produced any foreign antigen.

P.T.O



**IgE:** Help in immediate hyper sensitivity.

- ⇒ can not cross placenta
- ⇒ Do not activate complement system.
- ⇒ Trace amount present in serum.
- ⇒ molecular weight 190000

### Function:-

- ⇒ Activate complement system.
- ⇒ Help in the attachment of microbes in the mucosal surface.
- ⇒ 20% of protein in blood plasma. catalyze enzymatic capability.

**Q No: 4**

**Ans: Auto immune disorder:** It is the condition in which your immune system attacks your body. The immune system mistake parts of your body, like your joint or skin, as foreign. It release protein called ~~antibodies~~ Auto antibodies that attack healthy cell.

**Sign and symptom:**

Fatigue, achy muscles, swelling, low grad fever, hair loss, skin rashes, Trouble concentrating, etc..

**Causes:** The exact causes is Unknown. However some microorganism and drug may Trigger change that confuse the immune system.

**Diagnosis:** your Doctor will use a combination of Test and Review of your symptoms. The antinuclear antibody Test (ANA) is one of the first test that Doctor use when symptom suggest.

P.S.O

## Types of Auto Immune Disorders:-

- (i) Graves Disease
- (ii) Addison's Disease
- (iii) inflammatory bowel disease
- (iv) Auto Immune vasculitis
- (v) pernicious anemia
- (vi) Type 1 Diabetes mellitus
- (vii) psoriasis.
- (viii) system Lupus
- (ix) Rheumatoid arthritis.

## Ans:- Active and passive immunity:-

- ⇒ These are the types of Acquired immunity. Both natural and artificial immunity have passive and active component
- ⇒ Active immunity is resistance induced after contact with foreign antigen.
- ⇒ While passive immunity is resistance induced based on antibodies, perform in another host.
- ⇒ Active immunity Long term resistance
- ⇒ While passive immunity short term resistance.
- ⇒ Active immunity result from infection
- ⇒ While passive immunity come - from naturally or artificially gaining antibodies.
- ⇒ Active immunity slow onset.
- ⇒ passive immunity short term resistance.

## Q No # 6

**Ans: Factor EFFECTING immunogenicity:**

Following are the factor that effect immunogenicity.

(i) **Foreignness:** Antigen must be recognized as non-self by biological system.

Degree of immunogenicity depend on the degree of foreignness i.e. greater the phylogenetic distance between two species greater the structural disparity between them.

(ii) **Molecular size:** correlation exist between size of the macromolecule and its immunogenicity.

(i) Molecular mass  $\geq 100000$  Da Active immunogen.

(ii) molecular mass  $5000-15000$  Da poor immunogen.

(iii) **Immunogen:** molecule that induce immune response so antigen are immunogen.

(iv) **Complexity:** More complex more immunogenic

(v) **Adjuvants:** these are substance that when mixed and injected with antigen enhance the immunogenicity of antigen.

P.T.O

(vi) **Epitope**:- Antigen molecule which attach antibody induced immune system.

(vii) **paratope**:- part of antibodies which recognize antigen.

