

**QB365 Question Paper Software**  
**12th Standard - Biology**  
**Human Health and Disease Case Study Questions**

Exam Time: 00:30 Hrs

Date: 2025-10-14

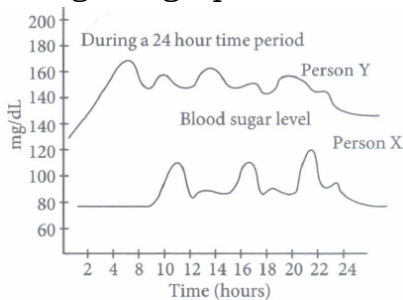
Total Marks: 8

**Questions:**

**Case Study Questions**

1. Read the following and answer any four questions from (i) to (v) given below:

The given graphs show fluctuations in blood sugar of person X and Y during a 24 hour time period.



Based on the above information, answer the following questions.

(i) Which of the following holds true for person X?

**(a) Person X is suffering from type I diabetes.**

**(b) Person X shows severe insulin cell depletion.**

**(c) Person X is normal and shows good control of blood sugar level.**

**(d) Person X is subjected to excessive abnormal thrust.**

(ii) The given graph indicates that person Y is suffering from

**(a) diabetes**      **(b) hypertension**      **(c) atherosclerosis**      **(d) rheumatic heart disease.**

(iii) Which of the following conditions are common in person Y?

**(a) Excretion of glucose in urine and excessive urination**

**(b) Polydipsia and mild beta cell depletion**

**(c) Progressive erosion of articular cartilage at synovial joint**

**(d) Both (a) and (b)**

(iv) A person suffering from diabetes mellitus becomes weak because

**(a) the cells are unable to utilise glucose and other carbohydrates for energy production**

**(b) degradation of ketone bodies**

**(c) cells utilize proteins for obtaining energy**

**(d) all of these.**

(v) **Assertion:** Type I diabetes involves failure of insulin to facilitate the movement of glucose.

**Reason:** Type II diabetes is caused by failure of beta cells to produce adequate amount of insulin.

**(a) Both assertion and reason are true and reason is the correct explanation of assertion.**

**(b) Both assertion and reason are true but reason is not the correct explanation of assertion.**

**(c) Assertion is true but reason is false.**

**(d) Both assertion and reason are false.**

2. Immunity is the capability of multicellular organisms to resist harmful microorganisms. It involves both specific and non-specific components acting as barriers or eliminators of a wide range of pathogens irrespective of their antigenic makeup. Other components of

the immune system adapt themselves to each new disease encountered and can generate pathogen-specific immunity. Immunity is a complex biological system that can recognize and tolerate whatever belongs to self and to recognize and reject what is foreign. The immune system has innate and adaptive immunity. Innate immunity, also known as native immunity, is a semi-specific and widely distributed form of immunity. It is defined as the first line of defense against or pathogens. Adaptive acquired immunity is the active component of the host immune response, mediated by antigen-specific lymphocytes. Adaptive immunity can be acquired either 'naturally' (by infection) or 'artificially' (through deliberate actions such as vaccination). Adaptive immunity can also be classified as 'active' or 'passive'.

(i) Often patients are immune to diseases like chicken pox once infected. This immunity is an example of

- (a) Naturally acquired active immunity**
- (b) Artificially acquired active immunity**
- (c) Naturally acquired passive immunity**
- (d) Artificially acquired passive immunity**

(ii) Which of the following immune mechanism is responsible for protecting us from diseases of other species?

- (a) Active immunity**
- (b) Passive immunity**
- (c) Innate immunity**
- (d) Adaptive immunity**

(iii) Which of the following conveys the longest-lasting immunity to an infectious agent?

- (a) Naturally acquired active immunity**
- (b) Artificially acquired active immunity**
- (c) Naturally acquired passive immunity**
- (d) Artificially acquired passive immunity**

(iv) If interferon is being produced in the body of a sick person, the person is most likely to be suffering from

- (a) typhoid**
- (b) malaria**
- (c) measles**
- (d) tetanus**

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## Answers Key:

### Case Study Questions

1. **(i) (c)** : Blood sugar level fluctuations in person X indicate that sugar level never exceed the normal limit and sufficient secretion of insulin at required times removes any extra sugar from blood and converts it into glycogen for future use. This implies that person X is normal and healthy.  
**(ii) (a)** : Elevated blood sugar levels in person Y indicate that he is suffering from diabetes mellitus.  
**(iii) (d)**:  
**(iv) (d)**:  
**(v) (d)** : Type I diabetes or insulin dependent diabetes mellitus or juvenile diabetes is an autoimmune disorder caused by failure of beta cells to produce adequate amount of insulin. Type II diabetes or non insulin dependent diabetes mellitus involves failure of insulin to facilitate the movement of glucose into body cells.
2. **(i) (a)**  
**(ii) (c)**

(iii) **(a)**

(iv) **(c)**

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