TENDER HEART HIGH SCHOOL

CLASS - VIII **SUBJECT** - BIOLOGY

SUBJECT TEACHER - Nidhi Rana

CHAPTER-13 SKIN- THE JACK OF TRADES

The following lesson is for Class-8 for the subject of Biology Topic - Skin and heat regulation of body which is covered in Chapter-13 Skin - the jack of all trades starting on Page No 127 of your text book titled 'Concise Biology- Selina Publications and is being submitted to you on **03.02.2025**

Children before starting with the discussion of function of temperature regulation by the skin, let us first recapitulate what cold blooded and warm blooded animals are.

COLD BLOODED OR ECTOTHERMAL ANIMALS

Organisms whose body temperature fluctuates with environmental temperature Such organisms are also called **POIKILOTHERMAL** animals. Such animals need to escape conditions of too hot or too cold weather/environment; thus the animals hibernate i.e. they go for winter sleep or aestivate i.e. they go for summer sleep. Example - Frog, lizard etc.

WARM BLOODED OR ENDOTHERMAL ANIMALS

Organisms that maintain more or less constant body temperature irrespective of the outside environmental conditions Such animals are also called **HOMEOTHERMAL** animals Example - Mammals (Human), Birds etc.

HUMAN BODY TEMPERATURE (some facts)

1) Human body temperature is about 37°C (in mouth), 1°C higher in rectum (i.e. last part of large intestine) and about 1°C

lower in arm pits

2) Body temperature shows variation of 0.3-0.5°C within a day being lowest in early morning and highest in late afternoon

3) Rise above 37°C normal body temperature means fever

4) Suitable temperature of 35°C - 40°C is essential for enzymes in the body to function. Lower temperature slows down the activity of enzymes and a higher temperature above 40°C destroys the enzymes.

Sources of heat production in the body

1) Various chemical reactions occuring in all body cells produce heat energy. For example respiration ie. oxidation of glucose produces heat.

2) Heat is also produced by the activity of muscles. Vigrous exercise involving muscular activity generates heat. For eg rubbing hands during winters generate heat in body

3) Heat also comes when we eat or drink hot food and beverages

LOSS OF HEAT FROM OUR BODY -

1) By sweating through skin - About 85% body heat is lost through skin by conduction convection or radiation

2) Through Lungs. - Heat is lost when we breathe out air that is warm [It can be experienced during winters by blowing out air on hands] Also some heat is lost during vapourisation of water from lungs.

CLASS-8 [BIOLOGY]
CHAPTER-13
Nidhi Rana

3) Heat is lost when urine and faeces are eliminated at body temperature from the body
4) Heat is lost when we take in cold food, water or cold beverages.

Now before going further in the chapter let us take a short break. Answer the following questions during the break.

Q1. State example of poikilothermal animals.
Q2. What is the main way in which heat is lost through the body?
Q3 Why organisms cannot survive if their body temperature goes above 40°C?

You may pause the lesson for 3mins
Break is over children. Listen to the correct answers first.

A1) Lizard is poikilothermal animal.
A2) Heat is lost mainly by the process of sweating through the skin
A3) Above 40°C all enzymes are lost or destroyed, hence body activities will cease or stop and organism cannot survive

TEMPERATURE REGULATION

The principal heat regulating centre is located in the hypothalamus which is a portion of the fore brain During winters when the body tends to cool below the normal body temperature then hypothalamus speeds up the process of heat production On the other hand when body tends to get overheated during summers, then hypothalamus accelerates the cooling process to cool down the body

CLASS - 8 [BIOLOGY]
CHAPTER - 13
Nidhi Rana

Children details about how hypothalamus speeds up the 'heat producing' and 'cooling processes' we will discuss next time.
Now with regard to the detailed explanation given above you are required to answer the following home assignment questions in the notebooks -

HOME ASSIGNMENT.

Q1 Define -
a) Poikilothermal animals
b) Endothermal animals

Q2 Name the principal heat regulating centre in human body.

Q3 List various ways in which heat is produced and lost from the body.

Page 4 Last Page