INDIAN SCHOOL AL WADI AL KABIR		
Class: VIII	**DEPARTMENT: SCIENCE**	**DATE: 29-11-2023**
WORKSHEET NO: 13	**TOPIC: REACHING THE AGE OF ADOLESCENCE**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS:

1. Why is a diet rich in proteins essential at puberty?
   a) For supplying sufficient energy
   b) For the formation of new cells during growth
   c) For the formation of strong bones and teeth
   d) for protection from diseases

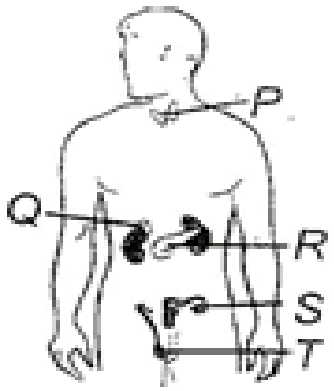
2. Which of these hormones is secreted by the endocrine gland located on the top of the kidneys?
   a) Adrenaline
   b) Insulin
   c) Progesterone
   d) Testosterone

3. The belief that the mother is completely responsible for the sex of the child is wrong because the child
   a) gets the sex chromosome only from the mother.
   b) develops in the body of the mother.
   c) gets one sex chromosome from the mother and the other from the father.
   d) gets sex chromosomes only from the father**.**

4. AIDS can spread from an infected person to another person through:
   a) sharing food
   b) blood transfusion
   c) sharing comb
   d) a mosquito bites

5. For the metamorphosis of tadpoles which of the following elements must be available in the water?
   a) chlorine
   b) carbon
   c) sulphur
   d) iodine

6. The given figure represents the location of various endocrine glands in the human body.



   Identify the glands marked as P, Q, R, S, and T and select the incorrect statement regarding these.
   a) Gland P secretes the hormone thyroxine, which regulates growth and metabolism.
   b) Gland Q secretes the hormone adrenaline, which regulates breathing, heart rate, and metabolism, and adjusts to stress
   c) Glands S and T secrete the hormones that control secondary sexual characters in females and males respectively.
   d) Gland R secretes the hormone insulin, whose increased concentration leads to diabetes.

7. The chemical substances which are secreted from endocrine glands are called
   a) Puberty
   b) Hormones
   c) Oestrogen
   d) Adolescence

8. When a sperm having X-chromosome fuses with the ovum, the child born will be
   a) Male
   b) Female
   c) male as well as female twin
   d) it depends on the chance of fusion

9. Acne and pimples on the face are due to the secretion of
   a) bile from the liver
   b) Oil glands during puberty
   c) Enzymes in the digestive tract
   d) Tear from tear glands

10. Which hormone is responsible for the secondary sexual characteristics in girls?
   a) Estrogen
   b) Testosterone
   c) Thyroxine
   d) Adrenaline

For question numbers given below two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii), and (iv) as given below.

i) Both A and R are true and R is the correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion
iii) A is true but R is false.
iv) A is false but R is true.

11. Assertion-Mother is not completely responsible for the sex of the child.
Reason- The child gets one sex chromosome from the mother and another from the father.
[Hint: Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.]

12. Assertion- If the water in which tadpoles are growing does not contain sufficient iodine, the tadpoles cannot become adults.
Reason- The metamorphosis of frogs is controlled by thyroxine hormone and iodine is needed to produce thyroxine.
[Hint: Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.]

13. Assertion- Most teenagers suffer from acne and pimples.
Reason- It is due to the increased activity of Thyroid glands during adolescence.
[Hint: Assertion is true but reason is false.]

14. **Assertion**: The pituitary gland triggers the shift of adolescence towards an adult stage by releasing hormones.
Reason: Hormones are the chemical substances produced and secreted by the endocrine glands.
[Hint: Both A and R are true but R is not the correct explanation of the assertion.]

II. **SHORT ANSWER TYPE QUESTIONS (2 M):**

1) What is adolescence? Why is adolescence also called teenage?
   [Hint: The period of life, when the body changes, leading to reproductive maturity is known as adolescence. Generally, adolescence begins at the age of 11 and lasts up to 18 or 19 years of age. Adolescents are also called teenagers because they cover the period of the 'teens' i.e. 13 to 18 or 19 years of age.]
2) Do both boys and girls grow at the same rate?
   [Hint: Girls grow faster than boys but by about 18 years of age, both reach their maximum height. The rate of growth in height varies in different individuals.]
3) Mention the changes observed in adolescents with respect to:
   a) Physical appearance
      [Hint: In boys, at the age of puberty, shoulders generally broaden as a result of growth. In boys, the muscles of the body grow more prominently than in girls. In girls, the region below the waist becomes wider. The muscles also comparatively grow less.]
   b) Voice pattern
      [Hint: Boys develop larger voice boxes (Larynx) to form a protruding part of the throat called Adam's Apple. Boys have deep voices or low-pitched voices. In Girls, the larynx is hardly visible (Adam's apple is not visible). They have high-pitched voices.]
4) What are secondary sexual characters? Write the secondary sexual characters found in both boys and girls at the onset of puberty.
   [Hint: The characters that help in distinguishing the males from the females are called secondary sexual characters.
   Secondary Sexual Characters in Boys: Facial hair, deep voice, and hair on the chest.
   Secondary Sexual Characters in Girls: high-pitched voice and growth of body hair.]
5) Define the following terms- a. Menstruation b. Menarche c. Menopause
   [Hint: **Menstruation** The breakdown and removal of the inner thick and soft lining of the uterus along with its blood vessels in the form of vaginal bleeding is called **Menstrual** flow or **menstruation** or periods.
   Menarche: The first menstrual flow which begins at puberty is known as menarche.
   Menopause: At 45 to 50 years of age, the menstruation cycle stops. Stopping menstruation is known as menopause.]

6) What are hormones? Mention their role in initiating reproductive function.
[Hint: Hormones are chemical substances secreted in endocrine glands. They are also known as ductless glands. Hormones control the changes that occur in adolescence. The male hormone called testosterone is secreted by the testes at the onset of puberty and causes the development of facial hair, chest hair, etc. At the onset of puberty in girls, ovaries secrete female hormone or estrogen which makes the breast develop.]

7) During adolescence females have a very high-pitched voice while males have a deeper voice. Why?
[Hint: Boys develop larger voice boxes (Larynx). Hence have a deeper voice. In females, the larynx is hardly visible. Hence they have a high-pitched voice.]

8) Why is it important for an adolescent to have physical exercise? [Hint: Walking and playing in fresh air keeps the body fit and healthy. All youngsters should take walks, exercise, and play outdoor games to keep themselves fit and for the proper growth and development of the body.]

III. **SHORT ANSWER TYPE QUESTIONS (3 M):**

1) In human females, each time during maturation and release of egg the inner wall of the uterus thickens. Is this thickening permanent? Give reasons.
[Hint- No, this thickening of the uterine wall is not permanent. If the egg gets fertilised, it starts developing and gets embedded in the uterine wall resulting in pregnancy. However, if fertilisation does not occur, the released egg and the thickened lining are shed off resulting in menstruation.]

2) Why are adolescents advised to maintain proper personal hygiene?
[Hint: Proper personal hygiene is more necessary for teenagers because the increased activity of sweat glands makes the body smelly. So, a daily bath is necessary. If all body parts are not washed or cleaned every day, the chances of bacterial infection are more. Girls should take special care of cleanliness during the time of menstrual flow.]

3) What is meant by metamorphosis? What is the role of hormones in the metamorphosis of frogs?
[Hint: The change from larva to adult is called metamorphosis. In frogs, the metamorphosis from tadpole to adult frog is controlled by thyroxine hormone which is produced by the thyroid gland. Thyroxine production requires the presence of iodine in water.]

4) What are sex hormones? Why are they named so? State their function.
[Hint: Sex hormones are chemical substances produced by a sex gland or other organ. For example, the testes make the male sex hormone called testosterone and the ovaries make the female sex hormone called estrogen. These hormones affect the sexual features of an organism. Hence they are called sex hormones.]

IV.LONG ANSWER TYPE QUESTIONS (5 M):

1) Write a short note on the sex determination of an unborn baby.
[Hint: All human beings have 23 pairs of chromosomes in the nuclei of their cells. Two chromosomes out of these are the sex chromosomes known as X and Y. A female has two X chromosomes whereas a male has one X and one Y chromosome. The sex of the unborn child depends on whether the zygote has XX or XY chromosomes.
   - If a sperm with an X chromosome fertilises the egg, the zygote thus formed will lead to the birth of a girl child.
   - If a sperm with a Y chromosome fertilises the egg, the zygote thus formed will lead to the birth of a male child]

2) Why is it important for adolescents to have a balanced diet?
[Hint: Adolescence is a stage of rapid growth and development. Hence, a balanced diet is essential at this stage. Here, a balanced diet means that the meals should include proteins, carbohydrates, fats, minerals, and vitamins in requisite proportion.]

3) Salma had very soft and smooth skin during her childhood. As she entered adolescence, she developed pimples on her face. The skin specialist advised her to wash her face at regular intervals. Can you explain the reasons for the appearance of pimples on her face and suggest ways to prevent them?
[Hint- During adolescence, the secretion of sweat glands and sebaceous glands increases leading to the formation of acne and pimples. Regular face wash keeps the face clean and dry and helps to reduce pimples.]

4) State the importance of:
   a) Insulin
   b) Thyroxine
   c) Adrenaline
   d) Estrogen
   e) Testosterone.
   [Hint: a) Insulin. Maintain the levels of blood sugar. Lack of insulin can lead to a condition called diabetes.

b. Thyroxine. Required for regulating body metabolism. Lack of thyroxine causes goitre.
c. Adrenaline. Helps the body to adjust to stress due to anger, worry, or embarrassment.
d. Oestrogen: Makes the breast develop, wider hips, etc.
e. Testosterone: Cause development of facial hair, chest hair etc.]

5) Name the hormone which would be released during the following situations.
   a) A frightened person
   b) Growth of a child to adult
   c) Development of caterpillar to moth
   d) Development of tadpole to frog

   [Hint: a) Adrenaline is secreted from the adrenal gland during stress conditions like fright or fear, anger, worry, or embarrassment. The hormone prepares the body to function at maximum efficiency by increasing the heartbeat and breathing rate, etc.
   (b) Growth hormone is secreted from the pituitary gland to regulate the normal growth of a person, i.e. growth of a child to an adult. Its deficiency in childhood makes a person dwarf, while its excess makes a person very tall (gigantism).
   (c) Insect hormones control the development of caterpillars to moths, i.e. metamorphosis.
   (d) Thyroxine is produced by the thyroid gland to control the development of tadpoles into frogs. Iodine in water is necessary for its production.]

V. CASE STUDY-BASED QUESTIONS

1. John and Radha have been classmates since childhood. When Radha was eleven years old, she developed a little swelling on her neck. She visited the doctor who started medication for her. After a few years, John also developed a slight protrusion in his throat. He got worried and went to the doctor. But the doctor assured him that it was a normal feature in boys while they were growing up.

a) What change occurs in females at puberty?
   (Hint: the region below the waist becomes wider, and hair grows under the arms.)
b) When does adolescence begin and end respectively?
   (Hint: Adolescence begins around the age of 11 and lasts up to 18 or 19 years of age.)
c) What is Adam's apple?
   (Hint: At puberty, the voice box or the larynx begins to grow. Boys develop larger voice boxes. The growing voice box in boys can be seen as a protruding part of the throat called Adam's apple.)
d) Can you think of any reasons for the difference in diagnosis?
   (Hint: The reason can be the changes at puberty are different in girls and boys.)

2.The changes which occur during adolescence in the human body are controlled by hormones. Hormones are secreted by glands called ductless glands or endocrine glands. The hormones are poured by the endocrine gland directly into the bloodstream. Endocrine glands include pituitary glands, thyroid gland, pancreas, and adrenal. The pituitary gland is also called the master gland because it controls the activities of other glands. In insects, metamorphosis is controlled by insect hormones. In the case of frogs, it is controlled by thyroxine hormones. When a person suffers from sugar problems, it means that his pancreas is not producing sufficient quantities of insulin hormone.

a) Which gland is also called the master gland and why?
   Hint: The pituitary gland is sometimes called the "master" gland of the endocrine system because it controls the functions of many of the other endocrine glands.
b) Name the hormone that controls metamorphosis in frogs.
   Hint: The transformation of a larva into an adult involving sudden and series of continuous changes in the body of an animal during its life cycle is called metamorphosis. For example: Frogs, Butterfly etc, thyroxine hormones
c) What is the role of the pancreas in a diabetic patient?
   Hint: The pancreas is supposed to automatically produce the right amount of insulin to move glucose from the blood into the cells. In people with diabetes, the pancreas either produces little or no insulin, or the cells do not respond to the insulin that is produced.

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