

Class 8 Science Chapter 10 Important Questions

Class 8 Science Chapter 10 Important Questions Set – 1

What do you mean by “teenagers”?

A teenager is someone who is between thirteen and nineteen years old. Adolescence begins around the age of 11 and lasts up to 18 or 19 years of age. Since this period covers the ‘teens’ (13 to 18 or 19 years of age), adolescents are also called “teenagers”. In girls, adolescence may begin a year or two earlier than in boys. Also, the period of adolescence varies from person to person.

Which type of growth can be seen at the time of adolescence?

Growing up is a natural process. Growth begins from the day one is born. But upon crossing the age of 10 or 11, there is a sudden spurt in growth which becomes noticeable. The changes taking place in the body are part of growing up. They indicate that you are no longer a child but are on the way to becoming an adult. Adolescence is also a period of change in a person’s way of thinking also. The period of life, when the body undergoes changes, leading to reproductive maturity, is called adolescence.

What do you mean by “puberty”?

The human body undergoes several changes during adolescence. These changes mark the onset of puberty. The most important change which marks puberty is that boys and girls become capable of reproduction. Puberty ends when an adolescent reaches reproductive maturity. Increase in height, change in body shape, voice change, development of sex organs can be seen in the period of adolescence.

Which type of emotional, mental and intellectual maturity can be seen at the time of adolescence?

Adolescence is also a period of change in a person’s way of thinking. Adolescents are more independent than before and are also self-conscious. Intellectual development takes place and they tend to spend considerable time thinking. In fact, it is often the time in one’s life when the brain has the greatest capacity for learning. Sometimes, however, an adolescent may feel insecure while trying to adjust to the changes in the body and mind. But as adolescent learners, you should know that there is no reason to feel insecure. These changes are a natural part of growing up.

“The most conspicuous change during puberty is the sudden increase in height” – Justify the statement.

The most conspicuous change during puberty is the sudden increase in height. At this time the long bones, that is, the bones of the arms and the legs elongate and make a person tall. For example, by the age 11, a boy has reached 81% of his probable full height, while a girl has reached 88% of her full height. Initially, girls grow faster than boys but by about 18 years of age, both reach their maximum height. All parts of the body do not grow at the same rate. Sometimes the arms and legs or hands and feet of adolescents look oversized and out of proportion with the body. But soon the other parts catch up and result in a proportionate body.

Height depends on the genes inherited from parents. It is, however, very important to eat the right kind of food during these growing years. This helps the bones, muscles and other parts of the body get adequate nourishment for growth. The rate of growth in height varies in different individuals. Some may grow suddenly at puberty and then slow down, while others may grow gradually.

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Did you notice that sometimes the voice of some of the boys in your class cracks? Why?

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. In girls, the larynx is hardly visible from the outside because of its small size. Generally, girls have a high-pitched voice, whereas boys have a deep voice. In adolescent boys, sometimes, the muscles of the growing voice box go out of control and the voice becomes hoarse. This state may remain for a few days or weeks after which the voice becomes normal.

What do you mean by “secondary sexual characters”?

The changes which occur at adolescence are controlled by hormones. Testes and ovaries are the reproductive organs in human beings. They produce the gametes, that is, sperms and ova. In girls, breasts begin to develop at puberty and boys begin to grow facial hair, that is, moustaches and beard. As these features help to distinguish the male from the female, they are called secondary sexual characters. Boys also develop hair on their chest. In both, boys and girls, hair grows under the arms and in the region above the thighs or the pubic region.

How does testosterone and oestrogen hormone help to the adolescent from the time of puberty?

The changes which occur at adolescence are controlled by hormones. Hormones are chemical substances. These are secretions from endocrine glands, or endocrine system. The male hormone or testosterone begins to be released by the testes at the onset of puberty. This causes changes in boys. For example, the growth of facial hair. Once puberty is reached in girls, ovaries begin to produce the female hormone or oestrogen which makes the breasts develop. Milk secreting glands or mammary glands develop inside the breasts. The production of these hormones is under the control of another hormone secreted from an endocrine gland called pituitary gland.

Write the role of hormones in initiating reproductive function.

Endocrine glands release hormones into the bloodstream to reach a particular body part called target site. The target site responds to the hormone. There are many endocrine glands or ductless glands in the body. The testes and ovaries secrete sex hormones. Further, the sex hormones are under the control of hormones from the pituitary gland. The pituitary secretes many hormones, one of which makes ova mature in the ovaries and sperms form in the testes. This happens as:
Hormones from pituitary stimulate testes and ovaries to release testosterone in male and oestrogen in female. Released in the blood stream and reach parts of the body or target site. Stimulate changes in the body at onset of puberty.

Write short note on “reproductive phase” of life in humans.

Adolescents become capable of reproduction when their testes and ovaries begin to produce gametes. The capacity for maturation and production of gametes lasts for a much longer time in males than in females. In females, the reproductive phase of life begins at puberty (10 to 12 years of age) and generally lasts till the age of approximately 45 to 50 years. The ova begin to mature with the onset of puberty. One ovum matures and is released by one of the ovaries once in about 28 to 30 days. During this period, the wall of the uterus becomes thick so as to receive the egg, in case it is fertilised and begins to develop. This results in pregnancy.

If fertilisation does not occur, the released egg, and the thickened lining of the uterus along with its blood vessels are shed off. This causes bleeding in women which is called menstruation. Menstruation occurs once in about 28 to 30 days. The first menstrual flow begins at puberty and is termed menarche. At 45 to 50 years of age, the menstrual cycle stops. Stoppage of menstruation is termed menopause. Initially, menstrual cycle may be irregular. It takes some time to become regular.

Menstrual cycle is controlled by hormones. The cycle includes the maturation of the egg, its release, thickening of uterine wall and its breakdown if pregnancy does not occur. In case the egg is fertilised it begins to divide and then gets embedded in the uterus for further development.

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What do you mean by “X and XY-Chromosomes”?

All human beings have 23 pairs of chromosomes in the nuclei of their cells. Two chromosomes out of these are the sex chromosomes, named X and Y. A female has two X chromosomes, while a male has one X and one Y chromosome. The gametes (egg and sperm) have only one set of chromosomes. The unfertilised egg always has one X chromosome. But sperms are of two kinds. One kind has an X chromosome, and the other kind has a Y chromosome.

How do you find out if a new-born baby would be a boy or a girl?

Inside the fertilised egg or zygote is the instruction for determining the sex of the baby. This instruction is present in the thread-like structures, called chromosomes in the fertilised egg. When a sperm containing X chromosome fertilises the egg, the zygote would have two X chromosomes and develop into a female child. If the sperm contributes a Y chromosome to the egg (ovum) at fertilisation, the zygote would develop into a male child. Remember, the sex chromosomes of the father determine the sex of an unborn baby.

Which type of hormones is responsible for metamorphosis? Discuss.

The process of transformation from an immature form of an animal like “larva” to its “adult form” in two or more distinct stages. This change from larva to adult is called metamorphosis. Metamorphosis in insects is controlled by insect hormones. In a frog, it is controlled by thyroxine, the hormone produced by thyroid. Thyroxine production requires the presence of iodine in water. If the water in which the tadpoles are growing does not contain sufficient iodine, the tadpoles cannot become adults.

What must an adolescent do for personal hygiene?

Everyone should have a bath at least once every day. It is more necessary for teenagers because the increased activity of sweat glands sometimes makes the body smelly. All parts of the body should be washed and cleaned every day. If cleanliness is not maintained there are chances of catching bacterial infection. Girls should take special care of cleanliness during the time of menstrual flow. They should keep track of their menstrual cycle and be prepared for the onset of menstruation.

Which type of nutritional diet needs of the adolescents? Explain.

Adolescence is a stage of rapid growth and development. Hence, the diet for an adolescent has to be carefully planned. A balanced diet means that the meals include proteins, carbohydrates, fats and vitamins in requisite proportions. Our Indian meal of roti/rice, dal (pulses) and vegetable is a balanced meal. Milk is a balanced food in itself. Fruits also provide nourishment.

Iron builds blood and iron-rich food such as leafy vegetables, jaggery, meat, citrus, Indian gooseberry (amla) are good for adolescents. Include cereals which give energy and milk, meat, nuts and pulses which provide proteins for growth. Also, include fats and sugar that give energy. Chips and packed or tinned snacks, though very tasty should never replace regular meals as they do not have adequate nutritional value. Remember, for infants, mother’s milk provides all the nourishment that they need.

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At the time adolescence – If anybody suggests that you will get relief if you take some drugs, just say ‘No’. Justify your answer.

Adolescence is a period of much activity in the body and mind which is a normal part of growing up. So do not feel confused or insecure. If anybody suggests that you will get relief if you take some drugs, just say ‘No’ unless prescribed by the doctor. Drugs are addictive. If you take them once, you feel like taking them again and again. They harm the body in the long run. They ruin health and happiness.

Write something about Acquired Immune Deficiency Syndrome (AIDS).

AIDS stands for Acquired Immune Deficiency Syndrome. AIDS is a dangerous disease. AIDS which is caused by a dangerous virus, HIV (Human Immunodeficiency Virus). This virus is present in the blood of AIDS patient. This virus can pass on to a normal person from an infected person by sharing the syringes used for injecting drugs. It can also be transmitted to an infant from the infected mother through her milk. The virus can also be transmitted through sexual contact with a person infected with HIV. There is no cure for AIDS disease. Its patients die easily even from simple disease because AIDS virus weakens the immunity of their body due to which their body cannot fight disease causing germs.

We should avoid taking medicines or drugs unless prescribed by a doctor. Give reasons.

We should avoid taking medicines or drugs unless prescribed by a doctor because:

- i). Several medicines have adverse side effects and have specific dosage levels which if not followed may harm the body.
- ii). Drugs can be addictive too and can ruin our health and happiness.

Write any two myths or notions about adolescence.

There are many wrong notions which you should now be able to discard as informed adolescents. For example, there are myths and taboos regarding bodily changes that adolescents experience. Some of these are given below and you can now argue why these are myths and not facts.

- i) A girl becomes pregnant if she looks at boys during menstruation.
- ii) The mother is responsible for the sex of her child.
- iii) A girl should not be allowed to work in the kitchen during menstruation.
- You may come across many other myths and taboos. Discard them.

What are the drawbacks of adolescent pregnancy?

In our country, the legal age for marriage is 18 years for girls and 21 years for boys. This is because teenage mothers are not prepared mentally or physically for motherhood. Unfortunately, in some of the areas of our country there is a tradition of child marriages. So, many problems can be seen in early marriages:

- i) The girls younger than 18 years of age are not prepared for motherhood.
- ii) Early marriage and motherhood cause health problems in the mother and the child.
- iii) Early marriage and motherhood cause agony to the girl as she is not prepared to fulfil the responsibilities of motherhood involved in bringing up the baby.
- iv) Early marriage and motherhood reduces the chances of higher education for girls.

- v) It also curtails employment opportunities for the young woman and may cause mental agony as she is not ready for responsibilities of motherhood.

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A few of Paheli's classmates eat potato chips and burgers regularly during the recess in school. Are these healthy eating habits? Give reason.

No, these are not healthy eating habits because burgers and potato chips have very little nutritional value. Although, these are very tasty but can never replace regular meals that forms balanced diet and is essential for the adolescence for their normal growth and development.

In human females, each time during maturation and release of egg, the inner wall of uterus thickens. Is this thickening permanent? Give reason.

No, this thickening of the uterine wall is not permanent. If the egg gets fertilized, it begins to divide to form an embryo. The embryo gets embedded in the uterine wall resulting in pregnancy. During pregnancy, no more eggs are released and the thickened lining is discharged only when the baby is born.

However, if fertilization does not occur, the released egg and the thickened lining of uterus along with blood vessels are shed off that resulting in menstruation.

Paheli was wondering how an infant grows healthily on only mother's milk.

Breast milk provides the ideal nutrition for infants. It has a nearly perfect mix of vitamins, protein, and fat, everything for new born baby needs to grow. And it's all provided in a form more easily digested than infant formula. Breast milk contains antibodies that help baby fight off viruses and bacteria. Breastfeeding lowers baby's risk of having asthma or allergies. Plus, babies who are breastfed exclusively for the first 6 months, without any formula, have fewer ear infections, respiratory illnesses, and bouts of diarrhoea. Mother's milk is a balanced food in itself so infant grows healthily.

Why is pituitary gland called "Master Gland"?

It is the most important endocrine gland and its size is just equal to a small pea. Pituitary gland exerts hormonal control over testis and ovary which secrete their own hormones testosterone and oestrogen respectively. These hormones help in the development of secondary sexual characters during adolescence. Pituitary gland also secretes another hormone called growth hormone that helps in growth of body. It also controls the thyroid gland and adrenal glands to secrete their hormones. It is called master gland because

many of the hormones which it secretes and keeps control the functioning of other endocrine glands in the body. These hormones are secreted when they receive order from the pituitary gland through its hormones.

It is believed that height of a child depends upon the genes inherited from parents. However, it is often seen that tall parents may have short children and vice versa. Are there factors other than genes that can cause these variations?

Height of a child depends upon the genes inherited from parents. However, there are some other factors also that can affect height. These factors include balanced diet, hormones, exercise and disease. Balanced diet is essential for the adolescents as it helps the bones, muscles and other parts of the body to get adequate nourishment for growth. Similarly, lack of hormones as growth hormones may lead to dwarfism.

Regular exercise is also essential for healthy muscles, bones and joints and their proper development. Lack of disease is a priority for growth that is related to other factors listed above.

Thus, height depends on combination of various factors and the absence or deficiency of any one of them can cause variations. This is why, tall parents may have short children and vice versa.