

## 10. REACHING THE AGE OF ADOLESCENCE

C.1. The endocrine system is made up of a number of ductless glands that secrete different types of hormones. These hormones in turn control different processes in the body.

2. Growth, development, behaviour and reproduction.
3. The adrenal glands secrete the hormone adrenalin when a person is angry or afraid. It prepares the body to fight or to run away.
4. The pituitary gland is also called the master gland as it influences the functioning of the other glands.

5. Endocrine glands:

- (i) Pituitary gland (or master gland)
- (ii) Adrenal gland
- (iii) Pancreas
- (iv) Thyroid gland
- (v) Testes
- (vi) Ovaries

Secreted hormones:

- (i) Growth Hormone (GH)
- (ii) Adrenalin
- (iii) Insulin
- (iv) Thyroxine
- (v) Testosterone
- (vi) Oestrogen

6. The stage of life when the body becomes capable of reproduction is known as puberty. It is normally 11–16 years in boys and 10–15 years in girls. However, the period may vary from person to person.
7. During adolescence, there is rapid mental and physical growth. Therefore, looking after physical growth is more important.
8. While the final height an individual attains is primarily controlled by genes, hormones control how the height increases. It is important that the body gets the correct nutrition during adolescence to ensure healthy growth of bones, muscles and other parts.

D.1. The pituitary gland produces several hormones that control water balance, growth and also the release of other hormones. The growth hormone (GH) stimulates growth and development in the body. The pituitary gland also influences the functions of other glands.

2. There is sudden increase in height during adolescence. During this period, different parts of the body do not grow at the same rate. For example, the arms and legs often grow faster than other parts, making them appear oversized and awkward. However, this is temporary and soon the body regains its normal proportions.

3. There is increase in the activity of sweat and sebaceous (oil) glands in adolescents. The skin becomes oilier. This often leads to appearance of acne and pimples on the face.
4. In boys, the shoulders become broader and the chest becomes wider. The muscles grow more than in girls. In girls, the pelvic region widens, hips broaden, breasts develop and increase in size. Mammary glands (milk secretion glands) develop inside the breasts.
5. Intellectual development occurs during adolescence to transform the individual from a child to an adult. As a result of trying to adjust to the changes in the body and mind, adolescents often find themselves feeling confused, insecure and self conscious.

E.1. The voice box or the larynx begins to grow. It becomes bigger in boys than in girls. This is why boys develop a deep voice whereas

girls have a high pitched voice. In boys as the larynx begins to grow, the voice often cracks. Sometimes the voice also becomes hoarse. However, this is temporary and the voice is soon back to normal.

2. The cycle of producing and releasing a mature egg, the thickening of the uterus wall, and its shedding if fertilization does not occur is known as the menstrual cycle. It is controlled

Each gamete has only one sex chromosome. An egg has an X chromosome. A sperm may have an X or a Y chromosome.

- (i) If a sperm containing an X chromosome fertilizes the egg, the zygote would have two X chromosomes and would develop into a female.
- (ii) If a sperm containing a Y chromosome fertilizes the egg, the zygote would have one X and one Y chromosome and would develop into a male.

Therefore, the sex of a baby is determined by which sperm, one containing the X or one containing the Y chromosome, fertilize the egg.

3. An adolescent should take proper nutrition. There is sudden increase in height and many changes take place in the shape of the body. It is important because if the body gets correct nutrition during adolescence then it would ensure healthy growth of bones muscles and other parts.

### **HOTS Questions**

1. During adolescence, different parts of the body do not grow at the same rate. For example, the arms and legs often grow faster than other parts. This makes their bodies appear disproportionate and awkward.
2. The pelvic area in girls broadens at puberty to accommodate the uterus, and later the growing baby in it.
3. We specially emphasize that adolescents should avoid drugs because adolescence is a stage of insecurity and confusion. Thus, it is easy for adolescents to get addicted to drugs and ruin their whole life.