

## ANSWERS TO TEXTBOOK QUESTIONS

### Objective Questions

#### A. Multiple choice questions.

- |       |      |      |      |       |
|-------|------|------|------|-------|
| 1. b  | 2. b | 3. a | 4. c | 5. d  |
| 6. b  | 7. b | 8. c | 9. a | 10. a |
| 11. b |      |      |      |       |

#### B. Give one word answers.

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|----------------------|------------------|------------------|--------------|
| 1. Adolescence       | 2. Puberty       | 3. Teenage       | 4. Ovulation |
| 5. Menarche          | 6. Menopause     | 7. Adam's apple  | 8. Pituitary |
| 9. Iodine            | 10. Testosterone | 11. Progesterone |              |
| 12. Sebaceous glands |                  |                  |              |

### Theoretical Questions

#### A. Short answer type questions.

- It is the 23rd pair of chromosomes XY is called the sex chromosome, which determines the sex of the baby.
- In nature there are 50-50 chances of a male or a female baby to be born.
- Uterus wall becomes thick with a lining of spongy tissue (endometrium) richly supplied with blood vessels. This cushion is developed to receive the embryo coming from fallopian tube after fertilization. The young embryo gets embedded in the endometrium. This helps to supply oxygen and nutrients to the developing embryo. till it develops into a foetus (a young baby ready to take birth).
- Teenage begins with the age of 13 and goes upto the age of 19. During this age the youngsters are also called 'teenagers'. This is actually the adolescence period.
- The bodies of the teenagers undergo several conspicuous changes which mark the onset of puberty (attaining sexual maturity) when they become capable of reproduction and are adults.
- Pancreas act both as endocrine as well as exocrine gland. Pancreas releases digestive juices into the intestine through ducts. It also secretes glucagon and insulin directly in the blood. Pancreas is not related to sexual growth.
- Hormones are enzymes (chemical substances) which are secreted from glands and are passed to the target organ through blood stream (not through ducts) where it shows its effect. No hormones are different from the secretion from the juice glands.
- The three sex hormones are estrogen, progesterone in females and testosterone in males.
  - Estrogen is released from the ovaries at the time of puberty to induce (i) female secondary characters, (ii) growth and development of female sex organs, (iii) preparing uterus to receive fertilized ovum at embryonic stage, and (iv) stimulates formation of eggs (ova) in the ovaries.
  - Progesterone regulates menstrual cycle and induces milk producing glands after the birth of the baby.
  - Testosterone is released from testes at the time of puberty to induce (i) growth spurt in boys, (ii) development of all secondary male sex characters including the development of male sex organs, and (iii) induce formation of sperms in testes.

#### B. Long answer type questions.

- Secondary sex characters that evolve in boys are:
  - Boys develop the heavier muscular body, wide shoulders, and narrow hips.
  - Enlargement of voice box leads to much deeper voice.
  - Maturation of testes to produce sperms.

- The growth of hairs on chest.
  - Enlargement of Adam's apple.
- Secondary sex characters that evolve in girl are:
- Shoulders and hips become wider.
  - Matured ovaries start to release a mature ovum.
  - Ovulation and menstruation initiate.
  - Mammary gland enlargement.
2. Girls at the age of 11 to 12 years and boys at the age of 13 to 15 years show a sudden spurt in growth. The body starts growing in height and weight. These changes indicate that the children are no longer child but are on way to attain sexual maturity. This period of development from childhood to manhood or womanhood is the period of adolescence.  
The bodies of the teenagers undergo several conspicuous changes which mark the onset of puberty (attaining sexual maturity) when they become capable of reproduction and are adults.
  3. The testes in male produce sperms and ovaries produce egg (ova). Sperms are male gametes and ova are female gametes. A sperm joins ova at the time of fertilization forming zygote which develops into an embryo. Embryo gets attached to the endometrium in the uterus of the mother where it develops into a foetus (young baby).
  4. Endocrine glands and their functioning is called Endocrine System. Some major glands in human body are:
 

<ol style="list-style-type: none"> <li>i. Pituitary gland;</li> <li>ii. Thyroid gland;</li> <li>iii. Adrenal gland;</li> </ol>	<ol style="list-style-type: none"> <li>iv. Pancrease;</li> <li>v. testes in males and ovaries in females;</li> <li>vi. Parathyroid gland</li> </ol>
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**Pituitary gland:** Pituitary gland secretes growth hormones (GH) and stimulates all other glands to release hormones from time to time.

**Thyroid gland:** Thyroid gland absorbs iodine and secretes a hormone 'thyroxin' which controls the disease 'goitre' of the neck. It also regulates calcium and phosphates in the body.

**Adrenal gland:** secrete hormone 'adrenalin' which maintains water and salt balance in the blood and also in controlling emotional status such as anger, fear, stress and excitement and regulates energy level in the body.

**Pancreas:** Pancreas act both as endocrine as well as exocrine gland. Pancreas releases digestive juices into the intestine through ducts. It also secretes glucagon and insulin directly in the blood.

**Testes in male and ovaries in females:** The testes to release male sex hormone the 'testosterone' at the time of puberty .The ovaries release female sex hormone 'estrogen' at the time of puberty.
  5. Pituitary Gland is the master gland located at the back and under the brain. It regulates the functioning of all other glands. Pituitary gland secretes growth hormones (GH) and stimulates all other glands to release hormones from time to time. If the pituitary gland gets damaged it will stop the following functions in other glands:
    - (a) The testes to release male sex hormone the 'testosterone' at the time of puberty. Testosterone induces (i) 'growth spurt' in boys, (ii) development of all secondary male sex characters at puberty including growth and development of male sex organs, and (ii) formation of sperms in testes.
    - (b) The ovaries to release female sex hormone 'estrogen' at the time of puberty. Estrogen induces (i) female secondary sex characters, (ii) growth and development of female sex organs, (iii) preparing uterus to receive fertilized ovum at initial embryonic stage, and (iv) stimulates formation of egg cells (ova) in the ovaries. Yet another hormone from ovaries is 'progesterone' which regulates reproductive (menstrual) cycle and induces milk producing glands after the birth of the baby.
  6. Adrenal glands are two and located one on each kidney. Adrenals secrete hormone 'adrenalin' which maintains water and salt balance in the blood and also in controlling emotional status such as anger,

fear, stress and excitement and regulates energy level in the body. Under shock from fear, adrenalin affects the nervous system and induces sweat secretion from sweat glands.

7. Thyroid gland absorbs iodine and secretes a hormone 'thyroxin' which controls the development of 'goitre' of the neck. It also regulates calcium and phosphates in the body. Ordinarily there is no source of Iodine in our food. Iodine being important for the functioning of the Thyroids, it is added to the common salt (Iodized salt) which is a part of our food. Iodine in traces is sufficient for maintaining thyroid glands.
  8. Sex of the baby is determined by the presence or absence of 'Y gene in the sperm and hence a women cannot be blamed for giving birth to a baby girl.
  9.
    - Our society must learn that early marriage in girls is not a healthy way of life. The girl below the age of 18 years is passing through adolescence and so, she is neither emotionally nor physically prepared for marriage. It also affects the proper care of the babies born to an immature mother.
    - In some societies because of dowry system or just for the sake of showing supremacy of man, head of the family wants to show that he has sons and no daughter. It is a common practice to ascertain the sex of the foetus in mother's womb and in case the baby in the foetus is a female child, the mother is forced to abort. This is infanticide (killing of a foetus). It is not only unhealthy but treacherous for the young mother. Even the doctor who identifies the sex of the foetus is committing crime. Girl should be educated to be economically independent. Girl or a boy, both balances the family.

**Remember:** Each person's body is private and personal property and deserves to be respected. It is not only wrong but unlawful to look at or touch one's body in an undesirable manner.
  10. No. Girls are not less intelligent than boys. Most of the toppers are girls students in their board exams. Girls are excelling well in all fields.
  11. Adolescence is the growing period in the life of young ones and hence not only sufficient but nutritive food should be taken by young boys and girls.
  12. Deficiency of iodine in diet may result in the goitre, a condition in which the thyroid gland swells up and your neck region swells and projects out.
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  15. The bodies of the teenagers undergo several conspicuous changes which mark the onset of puberty (attaining sexual maturity) when they become capable of reproduction and are adults. They develop secondary sex characters due to hormonal changes taking place in their body. Mustaches and beard appear as facial hair, a distinguishing character of male.
  16. Drug takers lose the sense of discrimination and hence they more prone to contract HIV.
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