

Reaching the Age Adolescence

Very Short Answer Type Questions

Q.1. What is the special name of the period of life between childhood and adulthood?

Answer: The period of life between childhood and adulthood is called adolescence.

Q.2. Name another term for 'adolescents'.

Answer: Adolescents are also called teenagers.

Q.3. State the age at which adolescence usually begins and the age up to which it lasts.

Answer: Adolescence begins around the age of 11 and lasts upto 18 or 19 years of age.

Q.4. Which is the most conspicuous change (clear visible change) in boys and girls during puberty?

Answer: The most conspicuous change (clear visible change) in boys and girls during puberty is the sudden increase in height.

Q.5. How does the height of boys and girls change during puberty?

Answer: The long bones of arms and legs elongate and make a person tall.

Q.6. Name one factor on which the height of a person depends.

Answer: The height of a person depends on the genes inherited from parents.

Q.7. A nine-year-old boy is 120 cm tall. If the present height of boy is 75% of his full height, calculate the full height which the boy will eventually reach at the end of growth period.

Answer:

$$\text{Calculation for full height (cm)} = \frac{\text{Present height (cm)}}{\% \text{ of full height at this age}} \times 100$$

$$= \frac{120 \text{ cm}}{75} \times 100 = 160 \text{ cm tall}$$

Q.8. How do shoulders and chest change in boys during puberty?

Answer: As boys enter in puberty stage, their shoulders become broad and chest become wide.

Q.9. How do hips of girls change during puberty?

Answer: During puberty, the region below the waist becomes wider in girls.

Q.10. What is the other name of 'voice box'?

Answer: Voice box is also known as larynx.

Q.11. Which of the two have a smaller voice box: grown up boys or grown up girls?

Answer: Grown up girls have a smaller voice box than grown up boys.

Q.12. What is the common name of the bulge (or projection) at the front of throat in grown up boys?

Answer: The common name of the bulge (or projection) at the front of throat in grown up boys is Adam's apple.

Q.13. What substance is secreted by sebaceous glands?

Answer: Sebaceous glands secrete oil.

Q.14. Name the time period in one's life when the brain has the greatest capacity for learning.

Answer: Adolescence is a period of time in one's life when the brain has the greatest capacity for learning.

Q.15. Name two glands present in the skin whose increased activity causes pimples and acne.

Answer: Sweat glands and sebaceous glands are present in the skin and causes pimples and acne.

Q.16. What name is given to those sexual characteristics in humans:

(a) which are present in babies at birth?

(b) which develop in mature boys and girls?

Answer:

(a) Sexual characteristics which are present in babies at birth are called primary sexual characters.

(b) Sexual characteristics which develop in mature boys and girls are called secondary sexual characters.

Q.17. Name any two glands which function as endocrine glands as well as exocrine glands.

Answer: Testes and ovaries function as endocrine glands as well as exocrine glands.

Q.18. What is the other name of ductless glands?

Answer: Endocrine glands are also known as ductless glands.

Q.19. What term is used for the secretion of endocrine glands?

Answer: The secretion of endocrine glands is known as hormones.

Q.20. Name:

(a) female sex hormone, and

(b) male sex hormone.

Answer: (a) Estrogen (b) Testosterone

Q.21. Name the hormone which develops secondary sexual characteristic:

(a) in females (girls).

(b) in males (boys)

Answer: (a) Estrogen (b) Testosterone

Q.22. State the function of male sex hormone 'testosterone'.

Answer: The function of male sex hormone 'testosterone' is to develop secondary sexual characters in the boys.

Q.23. Name the endocrine gland which controls the production of sex hormones 'testosterone' and 'estrogen'.

Answer: The production of sex hormones 'testosterone' and 'estrogen' is under the control of another hormone secreted from an endocrine gland called pituitary gland.

Q.24. What is the name of the process in which the thickened uterus lining along with its blood vessels is removed from the body of a woman through vaginal bleeding?

Answer: The process in which the thickened uterus lining along with its blood vessels is removed from the body of a woman through vaginal bleeding is called menstruation.

Q.25. Which comes earlier in the life of a woman: menarche or menopause?

Answer: Menarche comes earlier in the life of a woman.

Q.26.A. Around which age menarche occurs in girls?

Answer: At puberty (10 to 12 years of age).

Q.26.B. Around which age menopause occurs in woman?

Answer: At 45 to 50 years of age.

Q.27. State one situation (other than menopause) when ovulation and menstruation stop in a woman.

Answer: When a woman is pregnant.

Q.28. Which of the two has a shorter reproductive phase of life: men or women?

Answer: Women has a shorter reproductive phase of life.

Q.29. Which of the following combinations of sex chromosomes produces a male child (or boy)?

XX or XY

Answer: XY combination of sex chromosomes produces a male child (or boy).

Q.30. Which of the two, sperm or egg cell (ovum), decides the sex of the child?

Answer: Sperm decides the sex of the child.

Q.31. What is the legal age for the marriage of (a) boys, and (b) girls, in our country?

Answer: The legal age for the marriage is (a) 21 years for boys, and (b) 18 years for girls in our country.

Q.32. Name a natural balanced food for infants.

Answer: Mother's milk is a natural balanced food for infants.

Q.33. During which time the adolescent girls should take special care of personal hygiene?

Answer: The adolescent girls should take special care of personal hygiene during the time of menstrual flow.

Q.34. Write the full name of (i) AIDS, and (ii) HIV.

Answer: (i) AIDS stands for Acquired Immunodeficiency Syndrome. (ii) HIV stands for Human Immunodeficiency virus.

Q.35. Write the name of the virus which causes AIDS disease.

Answer: HIV virus causes AIDS disease.

Q.36. Name the endocrine gland attached to the base of brain.

Answer: Pituitary gland is attached to the base of brain.

Q.37. Name the endocrine gland which secretes the growth hormone.

Answer: Pituitary gland secretes the growth hormone.

Q.38. Name the substance which is needed continuously by thyroid gland to make thyroxine hormone.

Answer: Iodine is needed continuously by thyroid gland to make thyroxine hormone.

Q.39. State the main symptom of goiter.

Answer: The main symptom of goiter is a very big and bulging throat.

Q.40. Name the hormone whose deficiency in body causes goiter.

Answer: The deficiency of thyroxine hormone in body causes goiter.

Q.41. Name the gland which secretes insulin hormone.

Answer: Pancreas secretes insulin hormone.

Q.42. Name the disease caused by the insufficient production of insulin hormone by pancreas.

Answer: The disease caused by the insufficient production of insulin hormone by pancreas is diabetes.

Q.43. Name the hormone which prepares our body for action to face emergency situation like danger, fear, anger or excitement.

Answer: Adrenaline hormone prepares our body for action to face emergency situation like danger, fear, anger or excitement.

Q.44. Name the endocrine gland which secretes hormone that maintains correct salt balance in the blood.

Answer: Adrenal gland secretes hormone called aldosterone that correct salt balance in the blood.

Q.45. Name a hormone (other than adrenalin) secreted by adrenals.

Answer: Aldosterone hormone is also secreted by adrenals.

Q.46. Name the hormone whose deficiency causes diabetes.

Answer: Insulin hormone deficiency causes diabetes.

Q.47. Name the hormone which is required for the metamorphosis of larvae (tadpoles) into adult frogs.

Answer: Thyroxine hormone is required for the metamorphosis of larvae (tadpoles) into adult frogs.

Q.48. Name the hormone which brings about metamorphosis in silk moth and changes caterpillar (larva) into adult silk moth.

Answer: Insect hormone brings about metamorphosis in silk moth and changes caterpillar (larva) into adult silk moth.

Q.49. State whether the following statements are true or false:

- (a) The estrogen hormone develops deeper voice in males at puberty.**
- (b) Menstruation stops in men permanently around the age of 45 to 50 years.**
- (c) Man (father) is responsible for the sex of the body.**
- (d) The sex chromosomes in all the gametes (sperms) of a man are not identical.**
- (e) Half the female gametes contain X chromosomes and the other half contain Y chromosomes.**
- (f) It is the sperm which determines the sex of a child.**
- (g) Each normal cell in our body contains 23 chromosomes and the other half contain Y chromosomes.**
- (h) A girl should not be allowed to work in the kitchen during menstruation.**
- (i) A woman (mother) is responsible for the sex of her child.**
- (j) Metamorphosis in insects (like silk moth) is brought about by thyroxine hormone.**

Answer: (a) False, the estrogen hormone is a female hormone secreted by ovaries.

- (b) False, menstruation stops in woman permanently around the age of 45 to 50 years.
- (c) True, Man (father) is responsible for the sex of the body.
- (d) True, the sex chromosomes in all the gametes (sperms) of a man are not identical.
- (e) False, female gametes contain only X chromosomes.
- (f) True, Sperm determines the sex of a child.
- (g) False, each normal cell in our body contains 23 pair of chromosomes.
- (h) False, it is a myth and not facts. A girl should not be allowed to work in the kitchen during menstruation.
- (i) False, man is responsible for the sex of his child.
- (j) False, Metamorphosis in insects (like silk moth) is brought about by insect hormone.

Q.50. Fill in the following blanks with suitable words:

- (a) Sexual maturity is reached at.....**
- (b) The changes which occur in boys and girls at puberty are brought about by various.....**
- (c) Initially, girls grow.....than boys.**
- (d) The changes occurring in body and mind during adolescence are a natural part of.....up.**
- (e) The features which help us to distinguish between a mature boy and a girl are called.....sexual characteristics.**
- (f) The onset of puberty is controlled by.....**
- (g) Menstrual cycle in women is controlled by.....**
- (h) Each normal body cell in humans contains.....pairs of chromosomes out of which.....pair is of sex chromosomes.**
- (i) X and Y chromosomes are called.....chromosomes.**
- (j) Early marriage and motherhood cause health problems in theand the.....**
- (k) The protective foods are And**

(l) Thyroid and adrenals secrete their hormones when they receive instructions from.....gland through its hormones.

(m) Metamorphosis in amphibians is brought about by.....hormone.

Answer: (a) puberty (b) hormones (c) faster (d) growing

(e) secondary (f) hormones (g) hormones (h) 23 ; 1

(i) sex (j) mother; child (k) fruits; vegetables (l) pituitary (m) thyroxine

Short Answer Type Questions

Q.51. Define adolescence. State some of the change which take place in boys and girls during adolescence.

Answer: The period of life, when the body undergoes changes, leading to reproductive maturity, is called adolescence. Adolescence begins around the age of 11 and lasts upto 18 or 19 years of age.

The changes which take place in boys are facial and body hair growth, voice deepens, testes start to make sperms etc.

The changes which take place in girls are breast grow, ovaries start to release egg, menstruation begins etc.

Q.52. What is puberty? Who attains puberty at an earlier age in human beings: male (boy) or female (girl).

Answer: The age at which the sex hormones and gametes begin to be produced and the body and the girl become sexually matured is called puberty.

Generally girl attains puberty at an earlier age (11 to 12 years) in human beings.

Q.53. Write two changes that happen during puberty to: (a) both boys and girls (b) boys only (c) girls only.

Answer: (a) (i) There is a sudden increase in the height of both boys and girls during puberty.

(ii) Development of sex hormones also take place in both boys and girls during puberty.

(b) Changes that place only in boys during puberty are:

(i) Growth of hairs on chest.

(ii) Enlargement of voice box which leads to much deeper voice

(c) Changes that place only in girls during puberty are:

- (i) Mammary gland enlargement
- (ii) Menstruation.

Q. 54.A. State two ways in which the body shape of boys changes during puberty.

Answer: The changes in body shape of boys during puberty occur in following ways:

- (i) In boys, shoulder become broad and chest become wide.
- (ii) In boys, the muscles of the body grow more prominently than in the girls.

Q.54.B. State two ways in which the body shape of girls changes during puberty.

Answer: The changes in body shape of girls during puberty occur in following ways:

- (i) In girls, the region below the waist becomes wider.
- (ii) Girls have high pitched voice.

Q.55. State one change in the body shape of grown up boys and one changes in the body shape of grown up girls which makes them look different.

Answer: In boys, the muscles of the body grow more prominently than in the girls. Whereas In girls, the region below the waist becomes wider. Thus, the changes in adolescent boys and girls are different.

Q.56.A. What is the effect of a larger voice box in grown up boys?

Answer: Voice box is also known as larynx. In adolescent boys, voice box begins to grow and becomes large. Because of larger voice box, the voice becomes hoarse in grown up boys.

Q.56.B. What is the effect of a smaller voice box in grown up girls?

Answer: In girls, larynx is small in size due to which they have a high pitched voice.

Q.57. What is Adam's Apple? Which of the two usually have an Adam's Apple: grown up boys or grown up girls?

Answer: In adolescent boys, voice box can be seen a protruding part of the throat called Adam's apple. Grown up boys usually have an Adam's apple.

Q.58. What change in the voice of body takes place when they reach puberty? What is the cause of this change?

Answer: When a boy reaches puberty, then his, voice box (also known as larynx). In adolescent boys, voice box begins to grow and becomes large. Because of larger voice box, the voice becomes hoarse in grown-up boys.

Q.59.A. Name two male sex organs and two female sex organs which develop completely at puberty.

Answer: At puberty, male sex organs like the testes and penis develop completely. In girls, female sex organs like ovaries and uterus develop completely.

Q.59.B. Name two things which may develop on the face of adolescent boy s and girls during puberty due to the increased activity of sebaceous glands and sweat glands in the skin.

Answer: Many adolescent boys and girls may get acne and pimples on the face during puberty due to the increased activity of sebaceous glands and sweat glands in the skin.

Q.60.A. State two secondary sexual characteristics in mature boys and two in mature girls.

Answer: Secondary sexual characteristics in mature boys:

- (I) Voice becomes deeper (low pitched voice).
- (II) Facial hair such as beard and moustache develop.

Secondary sexual characteristics in mature girls:

- (I) Development of breast.
- (II) Initiation of menstrual cycle.

Q.60.B. Which of the following are secondary sexual characteristics?

Ovaries, Moustache, Penis, Broad hips, Vagina, Beard, Breast, Adam's Apple, Wide shoulders, uterus, Testes, Deeper voice.

Answer: Moustache, broad hips, beard, breast, Adam's apple, wide shoulders and deeper voice are secondary sexual characteristics whereas ovaries, penis, vagina, uterus and testes are primary sexual characteristics.

Q.61. Which of the following are endocrine glands?

Salivary gland, Thyroid gland, Adrenal gland, Sweat gland, Pituitary gland, Sebaceous gland (Oil gland)

Answer: Thyroid gland, adrenal gland and pituitary gland are endocrine gland as they secrete their secretion directly into the bloodstream. So, they are termed as ductless gland. While salivary gland, sweat gland and sebaceous gland (oil gland) secrete their secretions through ducts.

Q.62.A. What name is given to the onset of menstruation in human females (or girls)? At what age does this occur?

Answer: The onset of menstruation in human females (or girls) is termed menarche. It occurs at puberty (10 to 12 years of age).

Q.62.B. What name is given to the permanent stoppage of menstruation in women? At what age does this occur?

Answer: The permanent stoppage of menstruation in women is termed menopause. It occurs at 45 to 50 years of age.

Q.63. Who is responsible for the sex of the unborn child: father or mother? Why?

Answer: The two chromosomes that determine the sex of the unborn baby are called sex chromosomes named X chromosomes and Y chromosomes. 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. Thus, in females all the egg cells contain X chromosomes while in males, half sperm have X chromosomes and half sperms have Y chromosomes.

When a sperm containing X chromosome fertilizes the egg, the zygote would have XX chromosomes and develop into a female child. If the sperm contributes a Y chromosome to the egg (ovum) at fertilization, the zygote would develop into a male child.

Thus, father is responsible for the sex of the baby which is born.

Q.64. What will be the sex of the child born:

(a) if X chromosome carrying sperm fuses with an egg cell carrying X chromosome?

(b) if Y chromosome carrying sperm fertilizes an ovum containing X chromosome?

Answer: (a) If X chromosome carrying sperm fuses with an egg cell carrying X chromosome at fertilization, then the zygote will have XX chromosomes and develop into a female child.

(b) If Y chromosome carrying sperm fuses with an egg cell carrying X chromosome at fertilization, then the zygote will have XY chromosomes and develop into a male child.

Q.65. What are hormones? Where are hormones made in the human body?

Answer: Hormones are chemical substances which coordinated the activities of the living organisms. Hormones are made and secreted by ductless glands called endocrine glands in the body. The hormones are released directly into the bloodstream and carried to the target site through blood circulatory system.

Q.66. What are sex hormones? Name two sex hormones.

Answer: Hormones released by the reproductive organs like testes and ovaries and involved in the development of secondary sexual characteristics are called sex hormones. The two common sex hormones are testosterone and estrogen.

Q.67. Define (i) menarche, and (ii) menopause.

Answer: (i) The first occurrence of menstruation at puberty is called menarche.

(ii) The permanent stoppage of menstruation is termed menopause. It occurs at 45 to 50 years of age.

Q.68. What is menstruation? Explain.

Answer: Menstruation is a process in which blood and mucous flows out every month through the vagina. Menstruation usually lasts for 3 to 5 days in human females. The frequency of menstrual cycle in human females is once in a month if egg is not fertilized.

Q.69. What are sex chromosomes? Name the two types of sex chromosomes.

Answer: The two chromosomes that determine the sex of the unborn baby are called sex chromosomes named X chromosomes and Y chromosomes.

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.

Q.70. Explain how sex is determined in the unborn baby.

Answer: The two chromosomes that determine the sex of the unborn baby are called sex chromosomes named X chromosomes and Y chromosomes. 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. Thus, in females all the egg cells contain X chromosomes while in males, half sperm have X chromosomes and half sperms have Y chromosomes.

When a sperm containing X chromosome fertilizes the egg, the zygote would have XX chromosomes and develop into a female child. If the sperm contributes a Y chromosome to the egg (ovum) at fertilization, the zygote would develop into a male child.

Thus, father is responsible for the sex of the baby which is born.

Q.71. What are the various ways in which AIDS virus (HIV) can be transmitted?

Answer: Various ways in which AIDS virus (HIV) can be transmitted are as follows:

- By sharing the syringes used for injecting drugs.
- It can be transmitted to an infant from the infected mother through her milk.
- It can be transmitted through sexual contact with a person infected with HIV.

Q.72. Explain how, the use of drugs helps in spreading AIDS disease.

Answer: AIDS is caused by a dangerous virus called HIV. This virus can be spread from infected person to healthy person by sharing the syringes used for injecting drugs.

Q.73. State the harmful effects of taking drugs.

Answer: Harmful effects of taking drugs are as follows:

- (i) Drugs are addictive. If you take them once, you feel like taking them again and again.
- (ii) They harm the body in the long run.
- (iii) They ruin health and happiness.

Q.74. Name one hormone secreted by pituitary gland. State the function of this hormone.

Answer: Growth hormone is secreted by pituitary gland. Growth hormone is necessary for the normal growth of a person.

Q.75. Explain why, people are advised to use iodized salt in cooking food.

Answer: Iodine is needed continuously by thyroid gland to make thyroxine hormone. If people do not have enough iodine in their diet, they will get goiter disease caused by lack of thyroxine. So, people are advised to use iodized salt in cooking food.

Q.76. What is goiter? What causes goiter?

Answer: The deficiency of thyroxine hormone in adults causes a disease called goiter. The main symptom of disease is that the neck of the person suffering from Goitre appears to be swollen.

Q.77. Which hormone lowers the blood sugar in humans? Name the gland which secretes this hormone.

Answer: Insulin hormone lowers the blood sugar in humans. Pancreas gland secretes insulin hormone.

Q.78. Name the hormone secreted by pancreas. What is the function of this hormone?

Answer: Insulin hormone is secreted by pancreas. The function of insulin hormone is to lower the blood sugar level.

Q.79. What is the function of adrenaline hormone in the body?

Answer: There are two adrenaline glands in the body and are located on the top of the kidneys. Adrenaline glands secrete adrenaline hormone which helps the body to adjust to stress when one is very angry, embarrassed, or worried.

Q.80. Name six endocrine glands in the human body. Also name the hormones secreted by each one of these glands.

Answer: Six endocrine glands in the human body are as follows:

- (i) Pituitary gland- It secretes growth hormone.
- (ii) Thyroid gland- It secretes thyroxine hormone.
- (iii) Pancreas- Secretes insulin hormone.
- (iv) Adrenal gland- Secrete adrenaline hormone.
- (v) Testes- Secrete testosterone.
- (vi) Ovaries – Secrete estrogen.

Q.81. Where are the following glands located in the human body?

(i) Pituitary

(ii) Thyroid

(iii) Pancreas

(iv) Adrenals

Answer: (i) Pituitary gland is attached to the base of brain.

(ii) Thyroid gland is present in the neck.

(iii) Pancreas is just below the stomach in our body.

(iv) There are two adrenal glands in our body and are located on the top of the kidneys.

Q.82. What will happen if the water in which tadpoles are growing does not contain sufficient iodine?

Answer: In frog, metamorphosis is controlled by thyroxine hormone and thyroxine production requires the presence of iodine. So, if the water in which tadpoles are growing does not contain sufficient iodine, the tadpole cannot become adult.

Q.83. What is acne?

Answer: Acne is a skin condition marked by eruption of numerous red pimples on the face.

Q.84. What are pimples? How are pimples formed?

Answer: Pimples are small red spots on the face of a person. Many adolescent boys and girls may get acne and pimples on the face during puberty due to the increased activity of sebaceous glands and sweat glands in the skin.

The excess oil secreted by sebaceous glands and sweat secreted by sweat glands get collected in the tiny pores of the skin. The accumulation of oil, sweat and dead skin cells block the tiny pores in the face skin. Then, bacteria grow in the blocked skin pores causing swelling and redness of skin which leads to the formation of pimples.

Q.85. Name two food items each which provide mainly:

(a) carbohydrates for energy

(b) fats for energy

(c) Proteins for growth

(d) vitamins and minerals for good health

Answer: (a) Rice and roti.

(b) Butter and ghee.

(c) Milk and pulses

(d) Fruits and vegetables.

Q.86. Why is iron mineral needed by our body? Name some of the iron-rich foods.

Answer: Iron mineral is needed by our body as it builds our blood. Some of the iron rich foods are leafy vegetables, meat, jaggary, citrus, Indian gooseberry (amla).

Q.87. State any two practices which can be adopted by adolescents to maintain personal hygiene.

Answer: Two practices which can be adopted by adolescents to maintain personal hygiene are given below:

(i) Adolescents boys and girls should take bath regularly.

(ii) Adolescent girls should take care of cleanliness of the body during the time of periods.

Q.88. Why is the more necessary for adolescents to take bath regularly (at least once every day)?

Answer: It is more necessary for adolescents to take bath regularly (at least once every day) because increased activity of sweat glands sometimes makes the body smelly.

Q.89. What will happen if personal hygiene (Cleanliness of body) is not maintained by adolescents?

Answer: If personal hygiene (Cleanliness of body) is not maintained by adolescents, it will increase the chances of catching bacterial infection.

Q.90. State the various ways in which early marriage and motherhood is harmful to the girls.

Answer: The various ways in which early marriage and motherhood is harmful to the girls are as follows:

(i) Early marriage and motherhood cause health problems in the mother and the child.

(ii) It reduces curtails employment opportunities for the young woman.

(iii) It may cause mental agony as she is not ready for responsibilities of motherhood.

Long Answer Type Questions

Q.91.A. What changes take place in boys during puberty?

Answer: Changes take place in boys during puberty:

- (i) The most conspicuous change (clear visible change) in boys during puberty is the sudden increase in height.
- (ii) Shoulder become broad and chest become wide.
- (iii) Muscles of the body grow more prominently than in the girls.
- (iv) Voice deepens in boys. It becomes low pitched voice.
- (v) Many adolescent boys and girls may get acne and pimples on the face during puberty due to the increased activity of sebaceous glands and sweat glands in the skin.
- (vi) Hair grow on the face in the form of moustache and beard, and on the chest.
- (vii) Hair grows under the arms and in the region above the thighs or the pubic region.
- (viii) Testes and penis become larger.
- (ix) Testes start to make sperm.

Q.91.B. What changes take place in girls during puberty?

Answer: Changes which occur in girls during puberty are:

- (i) Rapid increase in height.
- (ii) The region below the waist becomes wider.
- (iii) Hair grow in armpits and in pubic regions between the thighs.
- (iv) The ovary enlarges and starts producing matured eggs.
- (v) Menstruation begins.
- (vi) Have high pitched voice.
- (vii) Development and enlargement of breast.

Q.92.A. What is meant by the 'primary sexual characteristics' in humans? State two primary sexual characteristics in boys and two in girls.

Answer: Sexual characteristics which are present in babies at birth are called primary sexual characters. They include internal and external sex organs which are present in babies at the time of their birth. The primary sexual characteristics in males are Testes and penis.

The primary sexual characteristics in females are ovaries and uterus.

Q.92.B. What is meant by 'secondary sexual characteristics' in humans? Explain with the help of two examples.

Answer: Sexual characteristics which develop in mature boys and girls are called secondary sexual characters. These changes are controlled by hormones.

Hormones released by the reproductive organs like testes and ovaries and involved in the development of secondary sexual characteristics are called sex hormones. The two common sex hormones are testosterone and estrogen.

Secondary sexual characteristics in males are:

- (i) Hair grow on the face in the form of moustache and beard, and on the chest.
- (ii) Testis grow and starts producing sperms in males.

Secondary sexual characteristics in females are:

- (i) Milk secreting glands or mammary glands develop inside the breasts.
- (ii) Initiation of menstruation.
- (iii) Ovary enlarges and starts producing matured eggs.

Q.93. Describe menstrual cycle. What is the duration of menstruation cycle in women?

Answer: Menstrual cycle begins when a girl reaches the age of puberty. At this age, ovaries release sex hormones in the blood which cause maturation of ova in ovaries. One mature egg or ovum is released by one of the ovaries once in about 28 to 30 days. This is termed as ovulation. Before ovulation, uterus prepares itself to receive the fertilized egg. The inner lining of the uterus becomes thick and soft with lots of blood capillaries in it.

If the ovum does not get fertilized, then the inner lining of uterus is not required and hence it breaks down and comes out through the vagina in the form of a bleeding called menstruation.

Menstruation occurs once in about 28 to 30 days and it usually lasts for 3 to 5 days.

Q.94.A. What is an exocrine gland? Name two exocrine glands.

Answer: A gland which secretes its product into a duct or tube is called exocrine gland. Salivary gland and sweat gland are examples of exocrine glands.

Q.94.B. What is an endocrine gland? Name two endocrine glands.

Answer: Endocrine glands are also known as ductless glands as they release their secretion directly into the bloodstream. Thyroid gland, adrenal gland and pituitary gland are endocrine glands.

Q.95.A. What is meant by 'reproductive health'?

Answer: Reproductive health is defined as a state of physical, mental and social well-being of a person in all matters relating to the reproductive system at all stages of life.

Q.95.B. State the conditions necessary to maintain good reproductive health during adolescence.

Answer: The important conditions necessary to maintain good reproductive health during adolescence are:

- (i) It is necessary to eat balanced diet during adolescence.
- (ii) It is necessary to maintain personal hygiene during adolescence.
- (iii) It is necessary to take adequate physical exercise during adolescence.
- (iv) It is necessary to avoid taking any drugs during adolescence.

Multiple Choice Questions (MCQs)

Q.96. Reproductive age in women starts when their:

Answer: 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 first occurrence of menstruation at puberty is called menarche. It is the beginning of the reproductive life of a girl.

Q.97. The sex of a child is determined by:

Answer: The sex of a child is determined by the presence of a Y chromosome in sperm.

Q.98. The legal age for the marriage of boys in our country is:

Answer: The legal age for the marriage is 21 years for boys, and 18 years for girls in our country.

Q.99. The legal age for the marriage of girls in our country is:

Answer: The legal age for the marriage is 21 years for boys, and 18 years for girls in our country.

Q.100. The right meal for adolescents consists of:

Answer: Adolescents need balanced diet for normal growth and development of the body. 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 vegetables is a balanced meal.

Q.101. Adolescents should be careful about what they eat because Adolescents should be careful about what they eat because:

Answer: Adolescents should be careful about what they eat because proper diet is needed for the rapid growth taking place in their body.

Q.102. AIDS disease is caused by:

Answer: AIDS is caused by a dangerous virus called HIV. This virus can be spread from infected person to healthy person by sharing the syringes used for injecting drugs.

Q.103. Which of the following human disease can be prevented by the same hormone which brings about metamorphosis in frogs?

Answer: Thyroxine hormone is required for the metamorphosis of larvae (tadpoles) into adult frogs. Iodine is needed continuously by thyroid gland to make thyroxine hormone. If people do not have enough iodine in their diet, they will get goiter disease caused by lack of thyroxine. So, people are advised to use iodized salt in cooking food.

Q.104. Which of the following is a mis-matched pair?

Answer: Adrenaline hormone secreted by adrenal glands whereas pituitary gland secretes growth hormone.

Q.105. The hormone which is associated with male puberty is called:

Answer: Testosterone is a male sex hormone which is secreted by testes. This hormone brings changes in boys such as growth of facial hair.

Q.106. The dramatic changes in body features associated with puberty are mainly because of the secretions of:

A) Thyroxine

B) Estrogen

C) Adrenaline

D) Testosterone

Answer: Estrogen and testosterone are sex hormones which involved in the development and control of the reproductive organs and secondary sexual characteristics.

Q.107. Which of the following endocrine gland does not occur as a pair in the human body?

Answer: Pituitary gland is attached to the base of brain. It secretes growth hormone.

Q.108. Iodine is necessary for the synthesis of one of the following hormones. This hormone is:

Answer: Iodine is needed continuously by thyroid gland to make thyroxine hormone. If people do not have enough iodine in their diet, they will get goiter disease caused by lack of thyroxine. So, people are advised to use iodized salt in cooking food.

Q.109. Which of the following endocrine gland does not a primary sexual characteristic in females?

Answer: Ovaries, vagina and fallopian tubes are organs of female reproductive system whereas seminal vesicles are part of male reproductive system.

Q.110. Which of the following is the secondary sexual characteristics in females?

Answer: During puberty, the region below the waist becomes wider in girls.

Q.111. Which of the following can lead to menstruation in a 21 year old woman during ovulation?

A) Sperms available for fertilization

B) Oviducts blocked

C) Sperms not available for fertilization

D) Oviducts not blocked

Answer: There are two conditions which can lead to menstruation in a 21-year-old woman during ovulation. These are: (i) Blocked oviduct and, (ii) sperms not available for fertilization.

Q.112. The faulty functioning of an endocrine gland can make a person very short or very tall. This gland is:

Answer: Growth hormone is secreted by pituitary gland. Growth hormone is necessary for the normal growth of a person.

Q.113. Which of the following hormone prepares our body for action in emergency situations?

Answer: Adrenaline hormone prepares our body for action to face emergency situation like danger, fear, anger or excitement.

Q.114. A doctor advised a person to take injection of insulin because:

Answer: Insulin hormone is secreted by pancreas. The function of insulin hormone is to lower the blood sugar level.

Q.115. Pimples and acne are formed due to the increased activity of:

A) Adrenal glands

B) Sebaceous glands

C) Thyroid gland

D) Sweat glands

Answer: Many adolescent boys and girls may get acne and pimples on the face during puberty due to the increased activity of sebaceous glands and sweat glands in the skin.

Questions Based on High Order Thinking Skills (HOTS)

Q.116. When a human female reaches a certain age, then vaginal bleeding occurs for a few days after regular intervals of time:

(a) what is this process known as (i) in scientific terms, and (ii) in everyday language?

(b) What is the human female said to have attained at this stage?

(c) What does the onset of this process in human female signify?

(d) At what particular event in the life of a human female this process stops temporarily but starts again?

(e) What name is given to the event when this process stops permanently?

Answer: (a) (i) It is known as menstruation in scientific terms.

- (ii) It is known as periods in everyday language.
- (b) The process of menstruation begins at Puberty.
- (c) The onset of menstruation in human female signify that the reproductive system of human female has started working.
- (d) In the beginning of pregnancy, the process of menstruation stops temporarily but starts again.
- (e) When menstruation stops permanently, it is termed menopause.

Q.117. A woman is in her reproductive phase of life. Even when the sperms are available at the time of release of a mature ovum by her ovary, fertilization does not take place. Due to this, the woman is unable to bear a baby.

(a) What is the most likely defect in the reproductive system of this woman?

(b) Name the technique by which this woman can also have a baby?

Answer: (a) Due to blocked oviducts of the woman, the ovum released by her ovary cannot meet the sperm and get fertilized.

(b) In vitro fertilization technique is used to help those couples in having babies who can produce sperms and ovum but fertilization does not take place inside the woman's body due to blocked oviducts.

Q.118. Raj Kumar and his wife Sunita have been blessed with a baby girl. On the other hand, Kripa Shanker and his wife Vimla have been blessed with a baby boy. What type of sex chromosome has been contributed:

(a) by raj Kumar

(b) by Sunita

(c) by Kirpa Shanker

(d) by Vimla

Answer: If X chromosome carrying sperm fuses with an egg cell carrying X chromosome at fertilization, then the zygote will have XX chromosomes and develop into a female child.

In the other case, if Y chromosome carrying sperm fuses with an egg cell carrying X chromosome at fertilization, then the zygote will have XY chromosomes and develop into a male child. Thus, father is responsible for the sex of the unborn child.

- (a) Raj Kumar and his wife Sunita have been blessed with a baby girl. It means, X chromosome has been contributed by Raj Kumar.
- (b) Sunita also contributed X chromosome.
- (c) Kripa Shanker and his wife Vimla have been blessed with a baby boy, thus, Kripa Shanker contributed Y chromosome.
- (d) Vimla contributed X chromosome.

Q.119. A gland W is located just below the stomach in the human body. The gland W secretes a hormone X. The deficiency of hormone X in the body causes a disease Y in which the blood sugar level of a person rises too much. The person having high blood sugar is called Z. What are W, X, Y and Z?

Answer: W is Pancreas; X is Insulin; Y is Diabetes; Z is Diabetic.

Q.120. It was observed that the tadpoles are not growing into adult frogs in a village pond. A scientist who was asked to find the reason for this concluded that the pond water did not contain sufficient amount of a mineral P which could make a hormone Q. The hormone Q can cause a phenomenon R in tadpoles so that they become adult frogs.

(a) What are (i) P (ii) Q, and (ii) R?

(b) Name one human disease which can also be caused due to the deficiency of P in the food and water.

Answer: (a) (i) iodine (ii) Thyroxine (ii) Metamorphosis

(b) Iodine is needed continuously by thyroid gland to make thyroxine hormone. If people do not have enough iodine in their diet, they will get goiter disease caused by lack of thyroxine. So, people are advised to use iodized salt in cooking food.