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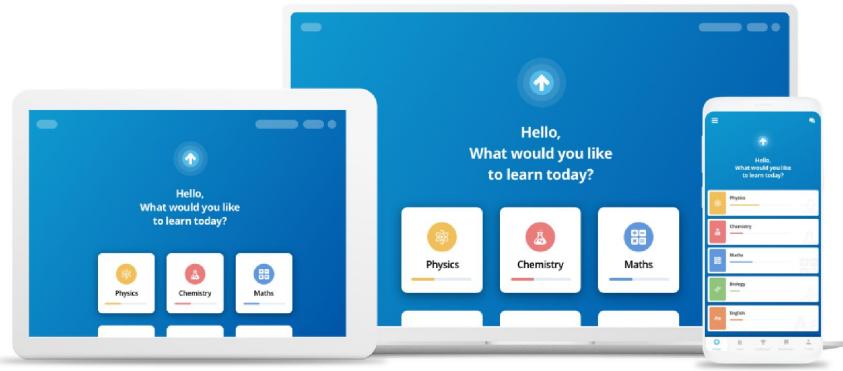
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#462838

Topic: Female reproductive system

What is the term used for secretions of endocrine glands responsible for changes taking place in the body?

Solution

Hormones are chemical substances which are secreted by endocrine glands. They are responsible for changes taking place in the body.

#462841

Topic: Female reproductive system

What is menstruation? Explain.

Solution

Monthly bleeding in women seen after the onset of puberty is called as menstruation. Girls usually start having menstrual periods between the ages of 11 and 14. It is the flow of blood and tissue from the lining of the uterus. This happens when the released ovum is not fertilized. This unfertilized ovum is then sloughed off along with the uterine lining and the woman bleeds.

#462846

Topic: Female reproductive system

What are sex hormones? Why are they named so? State their function

Solution

Hormones that control the growth and development of secondary sexual characters are called as sex hormones. These hormones are produced in males and females under the influence of action of the pituitary gland.

Sex hormone in the male is testosterone and sex hormone in the female are oestrogens.

1. Testosterone: This hormone functions in male and brings about the growth and development of testes. This hormone is also responsible for the appearance of beard and hoarseness of voice.
2. Oestrogen: This hormone functions in female and is responsible for the development of secondary sexual characters, such as enlargement of breast and development of reproductive organs.

#462855

Topic: Types of animal reproduction

Explain the importance of reproduction in organisms.

Solution

Reproduction is the process by which new species/organism is produced. Reproduction can be sexual or asexual. Reproduction is essential for the continuation of a species. It ensures the continuation of similar kind of individuals, generation after generation. Sexual mode of reproduction can bring about the variation in new generation which ultimately results in evolution of that particular species.

#462856

Topic: Fertilization

Describe the process of fertilization in human beings.

Solution

Fertilization is the biological process in which fusion of gametes of two different sexes, i.e., male and female takes place.

Internal fertilization occurs in human being. One egg is released from the ovary and is transferred to the fallopian tube during each ovulation cycle. The sperm travels to the egg through the fallopian tube. Fertilization also takes place in the fallopian tube.

#462858

Topic: Types of animal reproduction

Choose the most appropriate answer.

- (a) Internal fertilization occurs
 - (i) in female body.
 - (ii) outside female body.
 - (iii) in male body.
 - (iv) outside male body.

- (b) A tadpole develops into an adult frog by the process of
 - (i) fertilization
 - (ii) metamorphosis
 - (iii) embedding
 - (iv) budding

- (c) The number of nuclei present in a zygote is
 - (i) none
 - (ii) one
 - (iii) two
 - (iv) four

Solution

- (a) Internal fertilization is a type of sexual fertilization. It is the union of an egg cell with a sperm during sexual reproduction inside the body of a female. For this process, male sperms are required to enter into the female reproductive system.
- (b) Metamorphosis is a biological process of physical change in an animal after its growth.
- (c) A zygote is a fertilized egg formed after the union of male and female gamete. It has two nuclei contributed each by male and female gamete.

#462860

Topic: Types of animal reproduction

Indicate whether the following statements are true (T) or false (F).

- (a) Oviparous animals give birth to young ones. ()
- (b) Each sperm is a single cell. ()
- (c) External fertilization takes place in frog. ()
- (d) A new human individual develops from a cell called gamete. ()
- (e) Egg laid after fertilization is made up of a single cell. ()
- (f) *Amoeba* reproduces by budding. ()
- (g) Fertilization is necessary even in asexual reproduction. ()
- (h) Binary fission is a method of a sexual reproduction. ()
- (i) A zygote is formed as a result of fertilization. ()
- (j) An embryo is made up of a single cell. ()

Solution

a) Oviparous animals give birth to young ones - (F)

No, viviparous animals give birth to young ones.

(b) Each sperm is a single cell - (T)

Sperm cells are gametes, and thus, they are unicellular

(c) External fertilization takes place in frog - (T)

The female frog releases many egg cells in the water. As the egg cells come out of the female, the male frog releases sperm cells over them. Fertilization takes place.

Fertilization in frogs takes place outside the body of the female frog in the water.

(d) A new human individual develops from a cell called as gamete - (F)

No, a new human individual develops from combination of two gametes called as zygote.

(e) Egg laid after fertilization is made up of a single cell - (T)

After fertilization zygote is formed which is single cell.

(f) *Amoeba* reproduces by budding - (F)

No, amoeba reproduces by binary fission.

(g) Fertilization is necessary even in asexual reproduction - (F)

In asexual reproduction, a single organism or cell makes a copy of itself without fertilization.

(h) Binary fission is a result of asexual reproduction - (T)

Binary fission is the process of splitting of a parent cell into two daughter cell without fertilization.

(i) A zygote is formed as a result of fertilization - (T)

Zygote is formed by fertilization of male and female gamete.

(j) An embryo is made up of a single cell - (F)

No, an embryo is now made up of three layers ectoderm, mesoderm, and endoderm.

#462861

Topic: Fertilization

Give two difference between a zygote and a foetus.

Solution

Zygote- Zygote is the the result of fertilization, it is fusion of male and female gamete. It is unicellular in nature.

Foetus- Zygote undergoing multiple cellular division and reaching a stage where it starts resembling a human structure is called as a foetus. It is multicellular in nature.

#462862

Topic: Types of animal reproduction

Define asexual reproduction. Describe two methods of asexual reproduction in animals.

Solution

Asexual reproduction is a type of reproduction where fertilization does not take place as an only single parent is involved. Offspring produced is identical to the parent because they are produced as clones. Types of asexual reproduction are as follows: fission, budding and fragmentation.

A. Fission: This type is mainly seen in unicellular prokaryotes. A full grown organism at certain stage splits into two identical daughter organisms.

B. Budding: In this type of asexual reproduction, a 'bud' or an outgrowth is formed on the mature adult body and eventually this bud separates and act as an individual organism.

#462863

Topic: Female reproductive system

In which female reproductive organ does the embryo get embedded?

Solution

The very early stage of development in pregnancy is implantation stage. In this stage, the wall of the uterus is adhered by the embryo. The prenatal development at this stage is that the conceptus is a blastocyst. The foetus receives oxygen and nutrients from its mother that helps it to grow due to this type of adhesion.

#462865

Topic: Fertilization

Differentiate between internal fertilization and external fertilization

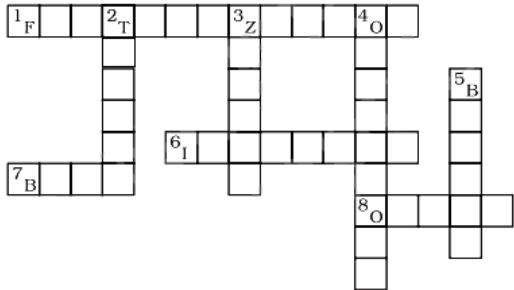
Solution

Internal fertilization is the type of fertilization that takes place inside the body. In this type of fertilization very few number of eggs are formed. For example- crocodile, bird, mammals.

External fertilization is the type of fertilization that takes place out of the body. In this type of fertilization, the yield of egg is high. For example- fish and frog.

#462867

Topic: Female reproductive system



Complete the cross-word puzzle using the hints given below.

Across

1. The process of the fusion of the gametes.
6. The type of fertilization in hen.
7. The term used for bulges observed on the sides of the body of *Hydra*.
8. Eggs are produced here.

Down

2. Sperms are produced in these male reproductive organs.
3. Another term for the fertilized egg.
4. These animals lay eggs.
5. A type of fission in *Amoeba*.

Solution

Across

- 1) Fertilization is the fusion of male gamete and female gamete to initiate the development of a new individual organism.
- 6) Internal fertilization is the union of an egg cell with a sperm during sexual reproduction inside the body of a parent. Internal fertilisation take place in hen.
- 7) Budding is a type of asexual reproduction that occurs in *Hydra* in which a part of the organism starts bulging out and develops into a separate individual.
- 8) Ovary is an organ found in the female reproductive system that produces the egg/ ovum.

Down

- 2) The testicle or testis is the male reproductive gland that produce both sperm and androgens (male hormones).
- 3) Zygote is the fertilized egg cell that results from the union of a female gamete (egg) with a male gamete (sperm).
- 4) Animals that produce young ones by means of eggs which hatch after they have been laid by the parent are called oviparous animals.
- 5) Binary fission is a type of reproduction in which a single organism gets divided into two. This type of reproduction takes place in *Amoeba*.

#464856

Topic: Types of animal reproduction

Asexual reproduction takes place through budding in

- A *Amoeba*
- B *Yeast*
- C *Plasmodium*
- D *Leishmania*

Solution

Saccharomyces cerevisiae commonly known as yeast, reproduces both asexually as well as sexually. Yeast reproduce asexually through a process known as budding.

#464857

Topic: Female reproductive system

Which of the following is not a part of the female reproduction system in human beings?

- A Ovary
- B Uterus
- C Vas deferens
- D Fallopian tube

Solution

Female reproductive system consists of ovaries, fallopian tubes, uterus, vagina and external genitals. Ovaries are the paired structure and serve as primary female sex organs.

Fallopian tubes are elongated tube like structures that connect the superior part of uterus, fundus, with ovaries. It is known as oviduct, these tubes propel the egg towards uterus and serve as site of fertilization. Uterus is thick walled muscular organ that projects into vagina through its cervix. It serves as site of embryo development. Vas deferens, also known as sperm duct, connects epididymis to urethra and serves to carry sperms from testis to urethra.

#464858

Topic: Fertilization

The anther contains

- A Sepals
- B Ovules
- C Carpel
- D Pollen grains

Solution

Stamen is the male reproductive organ that consists of long slender filament and broad knob like anther; each anther lobes of anther contains two long and cylindrical microsporangia. Pollen grain is the immature male gametophyte that precociously develops into mature male gametophyte through microgametogenesis in microsporangia. This makes option D correct. Carpel represents the unit structure female reproductive whorl and consists of stigma, style and ovary. This makes option C incorrect. Option B is incorrect as ovule, present in ovary, serves as site for megasporogenesis and is the female reproductive part of flower. Option A is incorrect as sepals are the greenish leaf like structures that form the outermost whorl of flower.

#464859

Topic: Types of animal reproduction

What are the advantages of sexual reproduction over asexual reproduction?

Solution

Sexual reproduction refers to the fusion of gamete of two parents to produce an offspring. The process of gametogenesis (gamete formation by meiosis) and syngamy (fusion of male and female gamete) produces genetic variations among the offspring. Thus, sexual reproduction serves as a source of genetic variations which, in turn, serve as raw material for evolution and speciation. Asexual reproduction is the production of progeny from a single parent without involving fusion of gametes; the reproductive bodies can be somatic cell/tissue or gametes. The absence of gametogenesis and syngamy results in the production of genetically identical offsprings (clones) that lack any genetic variations and thus, do not support evolution.

#464860**Topic:** Male reproductive system

What are the functions performed by the testis in human beings?

Solution

Testes are the primary sex organs of a male reproductive system that lie outside the abdominal cavity in the scrotal sac. Each testis is divided into lobules by connective tissue and each lobule contains one to three seminiferous tubules which are the site for sperm formation. The large sustentacular cells that extend from the capsule to the lumen of the seminiferous tubule are called as Sertoli cells. They serve to support, nourish and regulate the development of cells undergoing spermatogenesis. The endocrine cells present in the space between seminiferous tubules are termed as interstitial cells or interstitial cells of Leydig. They serve to secrete androgen, testosterone, which is responsible for the development of male secondary sexual characters.

#464861**Topic:** Menstrual cycle

Why does menstruation occur?

Solution

Menstrual cycle refers to female reproductive cycle characterized by regularly occurring changes in uterine lining and the loss of blood and tissue during this cycle is known as menstruation. The cycle includes egg maturation and preparation of uterus for implantation by thickening of endometrium under hormonal regulation. In absence of egg fertilization, egg rupture is followed by disintegration of uterine lining (endometrium). Since, uterine wall is rich in blood capillaries and tissues, it's shedding off results in release of blood and tissues which come out of vagina in menses.

#464862**Topic:** Methods of contraception

What are the different methods of contraception?

Solution

Any approach used to prevent the conception of unwanted pregnancy refers to contraception. Major contraceptive methods are categorised as barrier methods, surgical and chemical methods. Barrier methods are the physical devices that prevent contraception by inhibiting the entry of sperms in female genital tract. Example: condoms, diaphragms, cervical caps etc. Surgical methods include vasectomy (blocks vas deferens to prevent sperms from coming out) and tubectomy (blocks fallopian tubes to prevent entry of eggs in it) in males and females respectively. Chemical methods of contraception include any hormonal preparation that serves to alter the hormonal balance of body to prevent egg maturation or fertilisation. For example, oral and vaginal pills. Other methods include intrauterine devices (inserted by a physician into the uterus to prevent implantation), medical termination of pregnancy, coitus interruptus etc.

#464863**Topic:** Types of animal reproduction

How are the modes for reproduction different in unicellular and multi-cellular organisms?

Solution

The organisms with single-celled body organisation are referred to as unicellular organisms. Being single-celled, cell division in these organisms gives rise to offspring (mainly asexual reproduction) and therefore, there is no need of special organ system for the process of reproduction. For example, binary fission in *Amoeba* takes place by enlargement of the cell and increasing cell content followed by division of mother cell into two daughter cells, each of which is now offspring *Amoeba*. Other methods of reproduction in unicellular organisms include fragmentation, fission, budding etc. Multicellular organisms consist of multiple cells which are organised into tissues, organs and organ systems. Owing to the complexity of their body organisation, they have specialised reproductive system and reproduce by sexual reproduction.

#464864**Topic:** Types of animal reproduction

How does reproduction help in providing stability to populations of species?

Solution

Reproduction is production of offspring via sexual or asexual method and thus, is responsible for inheritance of genetic characters and to create variations. It includes DNA replication, the carrier of genetic information, and its transmission from parent to offspring. This ensures inheritance of species specific genetic characters from one generation to next and thereby maintain the species stability. Also, ratio of death and birth maintain the species stability. Since, reproduction is the only method to transmit DNA from one generation to next and to give birth to offspring, it is inevitable for maintaining species stability.

#464865**Topic:** Methods of contraception

What could be the reasons for adopting contraceptive methods?

Solution

Contraceptive methods include any approach to prevent conception; for example, oral contraceptive pills, surgical methods (vasectomy, tubal ligation), contraceptive implants, diaphragm, cervical cap, condoms, intrauterine devices etc. These methods are adopted for protection against sexually transmitted diseases, to have sufficient gap between two successive childbirth to ensure better health of mother and children, to restrict the number of kids, to enjoy reproductive health and to control exponential population growth.

#465006**Topic:** Genetic variation

Only variations that confer an advantage to an individual organism will survive in a population. Do you agree with this statement? Why or why not?

Solution

It is agreeable that only variations that confer an advantage to an individual organism will survive in a population. All variation does not necessarily provide an equal chance of survival to an organism in the environment. Survival chances highly depend on the nature of variations. For example- variation leading to the increase of heat-resistant bacteria is beneficial to the bacteria for its survival when it finds itself in a condition where suddenly there is an increase in the temperature of its habitat above the optimum temperature required for survival.

#465149**Topic:** Flower

Draw a labelled diagram of the longitudinal section of a flower.

Solution

The given diagram represents the longitudinal section of flower. The flower consists of both; male as well as female reproductive parts. The female reproductive part of the flower is known as pistil or carpel. Each carpel is made up of stigma, style and ovary. Male reproductive parts of flower are known as stamens.

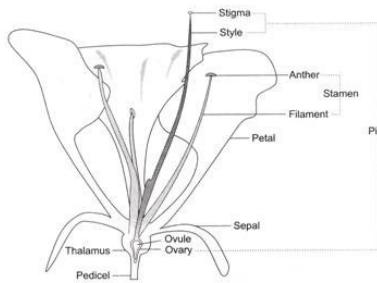


Diagram of the longitudinal section of a flower

#525947**Topic:** Types of animal reproduction

Why is reproduction essential for organisms?

Solution

Reproduction is the process of production of progeny by sexual or asexual means and ensures continuity of species despite mortality caused by biotic (competition, predation etc.) and abiotic factors (natural calamities). It helps to create recombination by the process of meiosis. It is a source of genetic recombination.

#525948

Topic: Types of animal reproduction

Which is a better mode of reproduction sexual or asexual? Why?

Solution

Sexual reproduction is characterised by meiosis and fertilisation which in turn add genetic diversity to the existing species. Genetic diversity serves as raw material for natural selection and hence, for evolution. Asexual reproduction produces only clones of parent and maintains the existing characters only, no genetic diversity or a new character is added making sexual mode better one.

#525951

Topic: Types of animal reproduction

Offspring formed due to sexual reproduction have better chances of survival. Why? Is this statement always true?

Solution

Yes, it's true. Sexual reproduction is characterized by meiosis and fertilization which in turn add new genetic combination (i.e. new characters) to the existing species. Genetic diversity serves as raw material for natural selection which favours the characters that impart a survival advantage to individuals. Accumulation of these adaptive characters over generation makes the population better adapted to prevailing condition and imparts survival advantage. It is not always true, for e.g. take the case in which two parents are heterozygous for a specific trait/allele (suppose sickle-cell anaemia). The parents are not affected because they still have one good allele. However, if their offspring acquires the defective alleles from both the parents (i.e. homozygous for the sickle cell anaemia allele) then the offspring will have a very short lifespan. Hence, it is not necessary that an offspring formed due to sexual reproduction will have better chances of survival.

#525953

Topic: Types of animal reproduction

How does the progeny formed from asexual reproduction differ from those formed by sexual reproduction?

Solution

Crossing over during meiosis and random fertilization of male and female gametes add genetic diversity to sexually reproducing organisms. The progeny of sexually reproducing organisms carry parental as well as new genetic combination and therefore, have new phenotypic traits along with parental ones. Asexual reproduction skips meiosis and fertilization of male and female gametes and single parent cell is involved in reproduction. Therefore, asexually reproducing organism produces genetically identical progeny i.e. clone.

#525957

Topic: Types of animal reproduction

Define:

- (a) Juvenile phase
- (b) Reproductive phase
- (c) Senescent phase

Solution

(a) Juvenile phase: It is the period of growth in an individual organism after its birth and before it reaches reproductive maturity.

(b) Reproductive phase: It is the period when an individual organism reproduces sexually.

(c) Senescent phase: It is the period when an organism grows old and loses the ability to reproduce.

#525958

Topic: Types of animal reproduction

Higher organisms have resorted to sexual reproduction in spite of their complexity. Why?

Solution

Sexual reproduction is complex (long and energy consuming) process characterized by meiosis and fertilization which in turn add new genetic combination (i.e. new characters) to the existing species. Genetic diversity serves as raw material for natural selection which favors the characters that impart survival advantage to individuals. Accumulation of these adaptive characters over generation makes the population better adapted to prevailing condition and imparts survival advantage.

#525967**Topic:** Fertilization

Define external fertilization. Mention its disadvantages.

Solution

External fertilization is the process in which the fusion of male and female gamete takes place outside the female body in an external medium, generally water. For example, fish, frog, starfish etc. undergo external fertilization.

External fertilization has certain disadvantages. In external fertilization, eggs have fewer chances of fertilization. This can lead to the wastage of a large number of the eggs during this process. Further, there is an absence of proper parental care to the offspring, which results in a low rate of survival in the progress.

#526010**Topic:** Fertilization

What is triple fusion? Where and how does it take place? Name the nuclei involved in triple fusion.

Solution

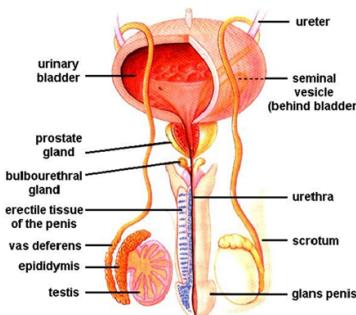
Fusion of male gamete with diploid secondary nucleus/central cell to form triploid primary endosperm nucleus is called as triple fusion as it involves three nuclei. It takes place in embryo sac during double fertilization. Two polar nuclei and male gamete are involved in it.

#526044**Topic:** Male reproductive system

Draw a labelled diagram of male reproductive system.

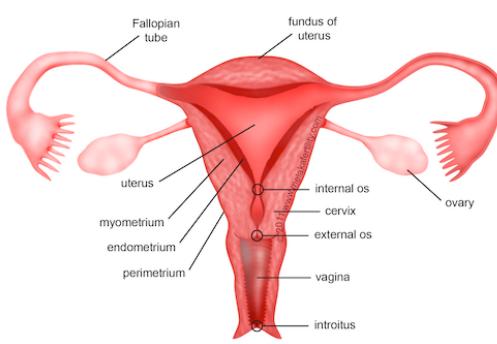
Solution

The given diagram represents the male reproductive system that regulates the formation and transportation of male gametes.

**#526045****Topic:** Female reproductive system

Draw a labelled diagram of female reproductive system.

Solution



#526046

Topic: Female reproductive system

Write two major functions each of testis and ovary.

Solution

Testes serve as the site of spermatogenesis for the production of sperm. The endocrine cells present in the space between seminiferous tubules are termed as interstitial cells. They serve to secrete androgen, testosterone, which is responsible for the development of male secondary sexual characters. Ovaries serve as the site of egg production by oogenesis and secrete female sex hormones namely estrogen and progesterone for development of female secondary sexual characteristics.

#526056

Topic: Male reproductive system

What are the major components of seminal plasma?

Solution

Semen is a mixture of sperms and seminal plasma. Seminal vesicle secretion accounts for 60% of seminal plasma and adds alkaline pH (to counteract acidic pH of the vagina), fructose (a nutrient), mucus and coagulating and local acting enzymes. Prostate gland secretions account for 30% of plasma and add citrate (a nutrient for sperm mitochondria), calcium and a proteolytic enzyme termed as prostate specific antigen (to liquefy ejaculate just before release). Secretion from Cowper gland adds only small volume.

#526060

Topic: Male reproductive system

What are the major functions of male accessory ducts and glands?

Solution

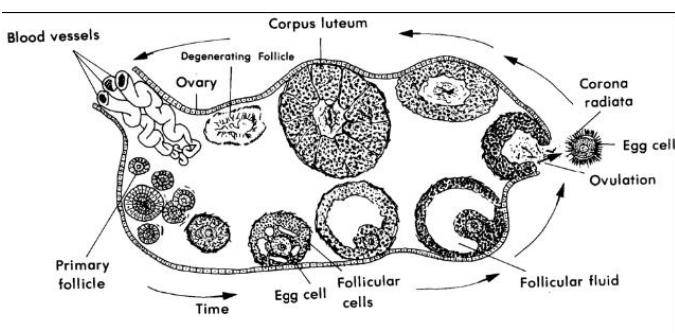
The male accessory ducts (vasa efferentia, epididymis, vas deferens, and rete testis) serve to store spermatozoa and to transport them outside urethra during ejaculation. Male accessory glands are seminal vesicles, prostate glands, and bulbourethral glands which contribute seminal plasma to semen. Seminal vesicle secretion accounts for 60% of seminal plasma and adds alkaline pH (to counteract acidic pH of the vagina), fructose (a nutrient), mucus and coagulating and local acting enzymes. Prostate gland secretions account for 30% of plasma and add citrate (a nutrient for sperm mitochondria), calcium and a proteolytic enzyme termed as prostate-specific antigen (to liquefy ejaculate just before release). Secretion from Cowper gland adds only small volume.

#526062

Topic: Female reproductive system

Draw a labelled diagram of a section through ovary.

Solution



#526088

Topic: Methods of contraception

Is the use of contraceptives justified? Give reasons.

Solution

Yes, the use of contraceptives is justified due to the following reasons:

- 1) Contraceptive devices help in reducing unwanted pregnancies, which reduces increased birth rate and hence, checks population explosion.
- 2) Contraceptives provide an option for planning the family by spacing the pregnancies and avoiding unwanted pregnancies.
- 3) Contraceptives also prevent the incidence of sexually-transmitted diseases, AIDS etc. to some extent.

#526089

Topic: Methods of contraception

Removal of gonads cannot be considered as a contraceptive option. Why?

Solution

Any techniques that can prevent the unwanted pregnancies are termed as contraceptive methods. Surgical removal of gonads causes sterility of individual and is irreversible process while contraceptive methods can be reversed when pregnancy is desired. Thus, it is not considered as a contraceptive option.

#526099

Topic: Methods of contraception

Correct the following statements :

- (a) Surgical methods of contraception prevent gamete formation.
- (b) All sexually transmitted diseases are completely curable.
- (c) Oral pills are very popular contraceptives among the rural women.
- (d) In E. T. techniques, embryos are always transferred into the uterus.

Solution

- (a) Surgical methods of contraception prevent the release of gametes.
- (b) Few sexually transmitted diseases are curable at their early stages; AIDS is not curable.
- (c) Oral pills are very popular contraceptives among the urban women.
- (d) In E. T. techniques, 8 celled embryos are always transferred into the fallopian tube while 16 celled are transferred to the uterus.

#634598

Topic: Types of animal reproduction

What is reproduction?

Solution

Reproduction is the process by which new organisms (offspring) are produced from organisms of the same kind.