

- Q1.** Define reproduction.
- Q2.** What are the two main methods of reproduction?
- Q3.** Write the source of making proteins in the cell information.
- Q4.** Mention two modes of reproduction.
- Q5.** What is a gene?
- Q6.** "Cell division is a type of reproduction in unicellular organisms." Justify.
- Q7.** State the mode of asexual reproduction in plasmodium.
- Q8.** Protozoans reproduce by binary fission as well as by multiple fission. In your opinion which process is better and why?
- Q9.** List two plants which are grown by vegetative propagation of stem.
- Q10.** Give one example for each of the following:
(a) Plants in which vegetative propagation occurs by grafting?
(b) Plants in which vegetative propagation occurs by leaves?
- Q11.** Name any two plants that reproduce by grafting.
- Q12.** Name a plant that has lost the capacity to produce seeds.
- Q13.** What is the triple fusion in higher plants?
- Q14.** Define the term double-fertilisation.
- Q15.** In which part of the human female reproductive system does the implantation of embryo take place?
- Q16.** Name two plants which bear unisexual flowers.
- Q17.** What should be the female-male ratio in a healthy society?
- Q18.** Give one example of wind pollinated plant.
- Q19.** What is the swollen sticky terminal end of the carpel called?
- Q20.** Name an STD which damages the immune system of human body.
- Q21.** What does a seed contain?
- Q22.** What is the duration of pregnancy in human female?
- Q23.** In a bisexual flower in spite of the young stamens being removed artificially, the flower produces fruit. Provide a suitable explanation for the above situation.
- Q24.** Name any two sexually transmitted diseases. What advice is given to prevent them?

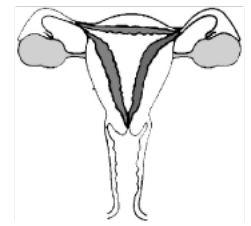
- Q25.** In tobacco plant, the male gametes have twenty four chromosomes. What is the number of chromosomes in the female gamete?
What is the number of chromosomes in zygote number?
- Q26.** What does ovary of a plant contain?
- Q27.** Name different parts of a flower that has germs cells.
- Q28.** Name the part that produces egg and the one that carries it to the womb.
- Q29.** What happens to ovule and ovary after fertilisation in a flowering plant?
- Q30.** Name the hormone secreted by testes and ovary.
- Q31.** What is implantation?
- Q32.** Why are testes located outside the abdominal cavity?
- Q33.** What is the main difference between sperms and eggs of human? Write the importance of this difference.
- Q34.** What is 'reproduction'? Mention the importance of DNA copying in reproduction.
- Q35.** Fallen leaves of Bryophyllum on the ground produce new plants whereas the leaves of rose do not? Explain the difference between two plants.
- Q36.** State a difference between budding in *hydra* and budding in *yeast*.
- Q37.** Explain how spirogyra reproduces?
- Q38.** Differentiate between binary and multiple fission for reproduction. Give one example of each.
- Q39.** Differentiate between fission of unicellular organism Leishmania and Plasmodium.
- Q40.** Small piece of root tissue was taken from the rose plant and placed in a nutrient medium. Each root tissue produced a new rose plant. Name the reproductive process involved. What type of genes will be possessed by new rose plant?
- Q41.** Differentiate between reproduction and regeneration. name any two organisms that grow by regeneration.
- Q42.** How does the process of budding differ from the process of spore formation.
- Q43.** The organisms formed by asexual reproduction are considered as clones. Why? State the advantages of sexual reproduction over asexual reproduction.
- Q44.** Identify among the following organisms which is reproduced by sexual and which by asexual method:
Amoeba, Human beings, Whale, *Hydra*, Spirogyra, Dog.
- Q45.** With a set of suitable diagram, describe the process of budding as seen in Yeast.
- Q46.** List four advantages of vegetative propagation.
- Q47.** List any two differences between pollination and fertilisation.
- Q48.** Name one sexually transmitted disease each caused due to bacterial infection and viral infection. How can these be prevented?
- Q49.** (a) In the human body what is the role of (i) seminal vesicles and (ii) prostate gland?
(b) List two functions performed by testes in human beings.

Q50. What are the differences between asexual and sexual reproduction?

Q51. In which part of the female reproductive organs of human female fertilisation takes place and what happens to the fertilised egg?

Q52. In the given figure label the concerned with

- (a) production of egg
- (b) site of fertilisation
- (c) site of implantation
- (d) site of entry of sperm



Q53. What changes are observed in the uterus subsequent to implantation of young embryo?

Q54. What changes are observed in the uterus if fertilisation does not occur?

Q55. What would be the ratio of chromosome number between an egg and its zygote? How is the sperm genetically different from the egg?

- Q56.** (a) What happens to the pollen when it is transferred on the stigma?
(b) What happens to ovary and ovule after fertilisation?

Q57. Explain why, pollination may occur without fertilisation but fertilisation will not take place without pollination.

Q58. In what respect is the human male gamete different from the female gamete?

Q59. List any two common pubertal changes that appear in both boys and girls.

Q60. (a) Specify the events which occur in the reproductive system of human female:

- (i) If egg is fertilised.
- (ii) If egg is not fertilised.

(b) Mention the changes that take place in uterus in both the above events.

Q61. (a) Name the structure in human male reproductive system that delivers the sperms from the testes to the urethra.

(b) Name the structure in human female reproductive system which delivers the egg from the ovary to the uterus.

Q62. Which parts/organs of the human reproductive systems perform the following functions:

- (a) Production of fluid to provide a medium for sperms.
- (b) Secretes the hormone that regulates formation of sperms.
- (c) Provides nutrition from mother's blood to embryo.
- (d) Carries egg from ovaries to the womb.

Q63. Write three differences between Binary Fission and Multiple Fission.

Q64. Explain vegetative propagation with the help of two examples. List two advantages of vegetative propagation.

Q65. (a) Define vegetative propagation.

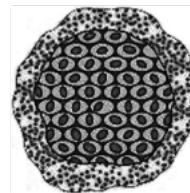
(b) Mention any two methods which use the property of vegetative reproduction to produce new plants.

(c) State any one advantage of this method.

Q66. How is reproduction in Hydra different from the reproduction in Amoeba?

Q67. The picture given below depicts the process of asexual reproduction in Plasmodium.

- (a) Name the process depicted above and define.
- (b) What is meant by asexual reproduction? Draw multiple fission.



Q68. Define the following processes as used as a method of reproduction.

- (a) Fragmentation
- (b) Self-pollination
- (c) Vegetative propagation

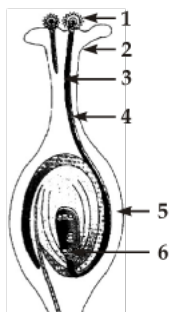
Q69. Draw diagrams to explain the regeneration that takes place in each of the body parts of *Planaria* when its body is cut into three pieces. Name any other organisms in which a similar process can be observed.

Q70. Why sexual reproduction is considered advantageous over asexual reproduction?

Q71. What is meant by pollination? Describe its various types along with names of various pollinating agents.

Q72. With the help of a diagram describe the structure of a flower.

Q73. In the given figure, label the parts numbered 1 to 6.



Q74. Name the organ where the sperms are produced and name the hormone produced by it. Why do sperms have tail but ovum does not?

Q75. Name the organ where ova are formed inside the body. Trace their pathway from their formation to fertilisation. Name the organ where they go after fertilisation.

Q76. Medical termination of pregnancy after being legalised in 1971 has resulted in the increased cases of illegal sex and has reduced the fear of bearing illegal child. Suggest three measures to reduce the cases of illegal sex/medical termination of pregnancies.

- Q77.** (a) Name an organism in which binary fission occurs in a definite orientation.
- (b) Draw a germinated seed and label the future root, future shoot and structure that stores food.

- Q78.** (a) State any two changes seen in boys at the time of puberty.
- (b) Define fertilisation and implantation.

- Q79.** (a) What is the difference between self-pollination and cross-pollination?
- (b) What happens to the pollen which falls on a suitable stigma? Explain.

Q80. Describe menstrual cycle.

Q81. Give reasons for the following: (a) Placenta has villi on embryo's side, (b) Oral pills are hormonal preparations, and (c) Uterine linings are thick and spongy.

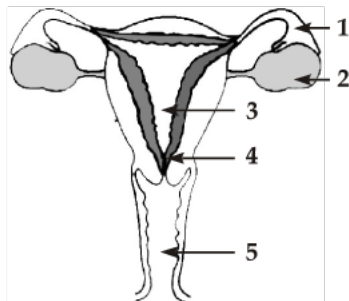
Q82. State in brief the role of human male reproduction system. Why is it called the 'urinogenital' system?

Q83. Explain the following:

- (a) Testes and ovaries are considered as primary sex organs.
- (b) Advantages of seed production in plant.
- (c) Vas deferens is long in males.

Q84. (a) Name the parts 1 to 5 of human female reproductive system.

(b) Name the part in which fertilisation takes place in this system.



Q85. Write any one advantage and one disadvantage of self-pollination and cross-pollination. In the context of development of new plants, which of them is better and why?

Q86. State the changes that take place in the uterus subsequent to implantation of embryo? How does this embryo get nourishment inside the mother's body?

Q87. Give reason: (a) Insects act as pollinating agents, (b) Variation is beneficial to a species, and (c) male-female ratio has been disturbed.

Q88. Name any two sexually transmitted diseases. How do these infectious diseases spread from one person to other. Give two symptoms of STDs.

Q89. List any four methods of contraception used by humans. How does their use have a direct effect on the health and prosperity of a family.

Q90. Discuss briefly the different types of reproduction.

Q91. Describe the process of fission, budding and spore formation in living organism.

Q92. (a) Draw a longitudinal section of a flower and label the following parts:

- (i) Part that produces pollen grain.
- (ii) Part that transfers male gametes to the female gametes.
- (iii) Part that is sticky to trap the pollen grain.
- (iv) Part that develops into a fruit.

(b) Differentiate between pollination and fertilisation.

Q93. (a) Explain the role of placenta in the development of human embryo.

(b) Give example of two bacterial and two viral sexually transmitted diseases. Name the most effective contraceptive which prevents spread of such diseases.

Q94. (a) Draw a sectional view of human female reproductive system and label the following parts:

- (i) where the development of egg occurs. (ii) where fertilisation takes place.
- (iii) where fertilised eggs get implanted.

(b) Describe the changes the uterus undergoes:

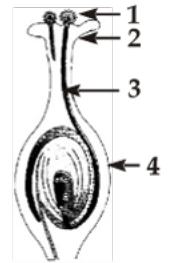
- (i) to receive the zygote. (ii) if zygote is not formed.

Q95. (a) Mention the role of following organs of human male reproductive system:

- (a) Testis (ii) Scrotum (iii) Vas deferens (iv) Prostate glands

(b) State the reasons why testes are located outside the abdominal cavity.

- Q96.** (a) List two reasons for the appearance of variations among the progeny formed by sexual reproduction.
- (b) (i) Name the parts marked '1' and '2' in the diagram (see figure):
 (ii) How does '1' reach on the '2'?
 (iii) What happens to the part marked '4' after fertilisation is over?
 (iv) Mention the importance of the part '3'.



Q97. Give reasons:

- (a) Placenta is extremely essential for foetal development.
 (b) Blocking vas deferens prevents pregnancy.
 (c) Wind acts as pollinating agent.
 (d) Use of condoms prevents pregnancy
 (e) Blocking of fallopian tubes prevents pregnancy.

- Q98.** (a) Which device prevents implantation by irritating the lining of uterus?
 (b) What could be the possible reason for declining female-male sex ratio in our country?
 (c) Name those parts of a flower which serve the same function as the following do in animals:
 (i) Testis (ii) Ovary (iii) Eggs (iv) Sperms

Q99. Draw a neat diagram of the human male reproductive system and label the parts performing the following functions:

- (a) Production of sperms.
 (b) Gland which provides fluid.
 (c) Provides low temperature for the formation of sperms.
 (d) Common passage for sperms and urine.

Or

Draw a neat diagram of human male reproductive system and label the parts:

- (a) the glands from which the secretion male reproductive system and label the parts:
 (b) the tube which delivers the sperms formed.
 (c) the tube which forms common passage for both sperms and urine.
 (d) the cavity where testes are located.

Name a sexually transmitted disease and a method to avoid it.

- Q100**(a) Differentiate between pollen grains and ovule.
 (b) State in brief the functions of the following parts of the human female reproductive system:
 (i) Ovary (ii) Fallopian tube (iii) Uterus

- Q101**(a) What is fertilisation?
 (b) Distinguish between external and internal fertilisation.
 (c) What is the site of fertilisation in humans?
 (d) List two differences between mode of reproduction in human beings and amoeba.

Q102 Explain what happens when:

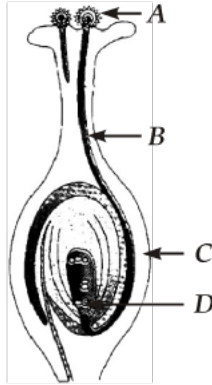
- (a) Testosterone is released in males.
 (b) Pollen grain falls on stigma of the flower.
 (c) Egg fuses with sperm cell.
 (d) Planaria is cut into many pieces.
 (e) Buds are formed on the notches of the Bryophyllum leaf.

Q103(a) Name the respective part of human female reproductive system.

- (i) the produces egg.
- (ii) where fusion of egg and sperm takes place, and
- (iii) where zygote gets implanted.

(b) Describe in brief what happens to the zygote after it gets implanted.

Q104(a) Name the parts labelled *A, B, C, D* in the diagram given below:



(b) What is polination? State its significance.

(c) How does fertilisation occurs in flowers? Name the parts of the flower that develop into (i) seed and (ii) fruit after fertilisation.

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- S1.** Reproduction is a process by which new individuals of the same species are produced by existing organisms (parents).
- S2.** Asexual and sexual.
- S3.** DNA on the chromosome.
- S4.** (a) Sexual reproduction. (b) Asexual reproduction.
- S5.** A part of DNA on chromosome, capable of development of a character or trait in organisms.
- S6.** Unicellular organisms, *e.g.*, *Amoeba*, reproduce by cell division, called fission. A parent cell can divide into two or more daughter cells during this. So, cell division is a type of reproduction in unicellular organisms.
- S7.** Multiple fission.
- S8.** In my opinion, multiple fission is better because at a time, many daughter cells will be produced.
- S9.** (a) Jasmine, (b) Rose.
- S10.** (a) Rose, (b) Bryophyllum.
- S11.** (a) Rose, (b) Sugarcane.
- S12.** Banana.
- S13.** In flowering plants, one of the male gamete fuses with the two polar nuclei. This process is known as triple fusion. In this fusion, three nuclei are involved two polar nuclei and one male gamete.
- S14.** In flowering plants, two components of embryo sac egg and two polar nuclei are fertilised at one time separately by the two male gametes formed inside the pollen tube. This phenomenon is called double-fertilisation.
- S15.** Uterus.
- S16.** Papaya, watermelon.
- S17.** 1 : 1.
- S18.** Grass, Maize.
- S19.** Stigma.
- S20.** AIDS (Acquired Immuno Deficiency Syndrome).
- S21.** Seed contains the future plant in the form of embryo that develops into seedling in favourable conditions.
- S22.** 280 days about 40 weeks (Nine months).
- S23.** Since the pistil is intact cross pollination will take place leading to fertilisation and formation of fruit.
- S24.** Gonorrhoea, Syphilis and AIDS.
Advice to prevent them:
(a) Use of condoms. (b) Do not share injection needles/syringe.

- S25.** Female gamete = 24
Zygote = (24 + 24) = 48.
- S26.** The ovary contains embryo sac which has an egg – the female gamete.
- S27.** Stamen and pistil have germ cells.
- S28.** Ovary produces egg and fallopian tube carries it to the womb.
- S29.** After fertilisation ovule develops into the seeds and the ovary develops into fruit.
- S30.** Testes – Testosterone.
Ovary – Oestrogen and Progesterone.
- S31.** The attachment of fertilised ovum to the wall of uterus is called implantation.
- S32.** Sperm production requires little lower temperature compared to body temperature hence testis are located outside.
- S33.** Main difference between sperm and egg is that all eggs are of one type, bearing X chromosome while sperms are of two types, 50% having X chromosome while other 50% having Y chromosome.
- S34.** Reproduction is a process by which new individuals of the same species are produced by existing organisms (parents).

Importance of DNA copying in reproduction:

- (a) Copying or duplication of genetic material (DNA) through faithful replication is called DNA copying. It can be inherited by the progeny.
- (b) The process of DNA copying brings some variation each time. The surviving cells are similar to but subtly different from each other. This inbuilt tendency for variation during reproduction brings variations among individuals of the same species. This is useful for ensuring survival of the species.
- S35.** In Bryophyllum, vegetative propagation occurs in where buds grow in leaves. While in rose leaves do not form buds. Thus, its fallen leaves do not produce new plants.

S36.

Budding in <i>Hydra</i>	Budding in <i>Yeast</i>
(a) Buds produced are multicellular.	(a) Buds produced are unicellular.
(b) Buds get detached from parent body soon.	(b) Buds may remain attached to the parent body.

- S37.** Spirogyra breaks up into smaller pieces upon maturation. These fragments grow into new individuals.

S38.

Binary fission	Multiple fission
• The organism splits into two daughter cells. <i>e.g., Amoeba.</i>	• The organism splits into many daughter cells. <i>e.g., Plasmodium.</i>

S39.

Binary fission	Multiple fission
• Binary fission occurs in definite orientation in relation to whip like structure. <i>e.g., Amoeba.</i>	• Multiple fission occurs. <i>e.g., Plasmodium.</i>

- S40.** The process is called *tissue culture*.
Genes possessed by new plants will be same as that of parent plant.

S41.	Reproduction	Regeneration
	<ul style="list-style-type: none"> Reproduction is a process by which new individuals of the same species are produced by existing organisms (parents). Example: Sexual or asexual method. 	<ul style="list-style-type: none"> New organism develop from the body parts of certain organism. Example: Reproduction in Hydra.

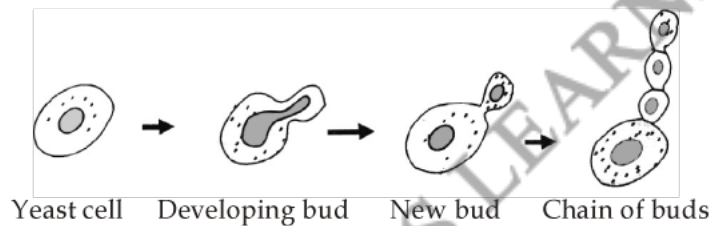
S42.	Budding	Spore formation
	<ul style="list-style-type: none"> Process of asexual reproduction where bud develops as an outgrowth of body due to repeated cell division <i>e.g., Yeast, Hydra</i>. 	<ul style="list-style-type: none"> Spore formation is the process in which tiny bulb like structures called sporangia develop in organisms like <i>Rhizopus</i>.

S43. Organisms produced by asexual reproduction contain exactly the same number of chromosomes as the parent cells have. Hence, they look like clones because the traits remain preserved.

Sexual reproduction results in the mixing of gametes of two individuals, hence variation occurs in offsprings leading to evolution.

- S44.** *Amoeba* – Asexual reproduction
 Human beings – Sexual reproduction
 Whale – Sexual reproduction
Hydra – Asexual reproduction
 Spirogyra – Asexual reproduction
 Dog – Sexual reproduction

S45. Yeast, a unicellular fungus, reproduces by budding.



When a yeast cell grows to become an adult cell, a small protuberance appears on it. The nucleus splits and the daughter DNA is given into this bud. The bud may detach as an independent yeast cell from parent cell or remain attached on the parent cell as a chain.

- S46.** (a) Plants raised by vegetative propagation bear flower and fruits earlier.
 (b) Plants that do not produce seeds can be propagated by this method.
 (c) All plants produced are genetically identical.
 (d) Any vegetative plant part can be used. This many new plants can be produced at a time.

S47. Distinction between pollination and fertilisation:

Pollination	Fertilisation
(a) Transfer of pollen grain from anther to stigma.	(a) It is the process of fusion of male gamete and female gamete resulting in formation of zygote.
(b) Pollination facilitates formation of pollen tube which carries male gamete to the ovule.	(b) Zygote later develops into seed which contains embryo.
(c) Occurs only in higher plants.	(c) Occurs in plants as well as in animals.

S48. Sexually transmitted disease caused due to bacterial infection is gonorrhoea. This disease is curable. Disease caused by viral infection is AIDS. This disease is not curable. These can be prevented by use of condoms during sexual act.

S49. (a) The role of seminal vesicles and the prostate gland are as follows:

- (i) **Seminal vesicles** produce seminal plasma which in the form of fluid makes the transport of sperms smooth.
- (ii) **Prostate gland** secretes prostatic fluid that keeps the sperms alive and helps them to swim vigorously.

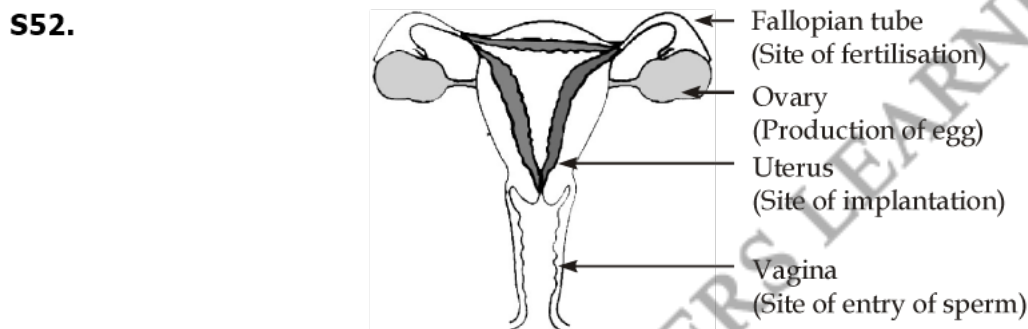
(b) In human beings, testes performs dual function:

- (i) Production of sperms.
- (ii) Secretion of male hormone testosterone.

S50. Differences between asexual and sexual reproduction are as follows:

Asexual reproduction	Sexual reproduction
(a) Only one parent gives rise to progeny.	(a) Two parents are involved.
(b) No fusion of DNA involved.	(b) Fusion of gametes takes place, resulting in fusion of DNA.
(c) Offsprings produced are almost identical to parents.	(c) Because of fusion, offsprings produced are different from parents.

S51. In human female, fertilisation takes place in the fallopian tube. After fertilisation, the fertilised ovum travels to uterus and gets attached to the wall of uterus for further development. This is called implantation.



S53. Soon after implantation, uterus wall thickness increases and a special tissue placenta is formed. This is a disc embedded in the uterine wall. It contains villi on the embryo side of the tissue. On mother's side are blood spaces which surround villi. This provides a large surface area for glucose and oxygen to pass from the mother to the embryo. The waste products generated by the embryo also get removed as they are transferred into mother's blood.

S54. If fertilisation fails to take place the thick and spongy lining of uterus, which if formed to receive the fertilised ovum breaks and comes out through the vagina as blood and mucus. This cycle takes place every month and is known as menstrual cycle.

S55. Egg 1 : 2 Zygote.

All eggs have 22 autosomes and one X chromosome (22 X). 50% sperms have 22 autosomes and X chromosome (22 X) and rest 50% have 22 autosomes and Y chromosome (22 Y).

S56. (a) Pollen, on landing on a suitable stigma, grows the pollen tube so as to reach the female gamete in the ovary. The pollen tube carries two male gametes in it, which fuse with the egg cell to form zygote and other male gamete fuses with secondary nucleus.

(b) After fertilisation, the ovary grows rapidly and ripens to form a fruit. After fertilisation, the ovule develops a tough coat and is gradually converted into a seed.

S57. Pollination is landing of pollen grain on suitable stigma. It may not always result in fertilisation.

However, fertilisation requires both male and female gametes. If pollination does not occur, male gamete is not available. Hence, fertilisation cannot take place.

S58.	Male gamete	Female gamete
	(a) Produced in large number each time.	(a) Only one gamete produced at a time.
	(b) They are smaller.	(b) They are larger as they have food reserve.
	(c) They are motile.	(c) They are non-motile.

- S59.** (a) Appearance of pubic hair.
 (b) Skin becomes oily and may break into pimples.

- S60.** (a) (i) Pregnancy (ii) Menstruation.
 (b) In first case, the lining of uterus becomes thick and spongy, richly supplied with blood. In second case, the lining breaks along with blood vessels and comes out through vagina.

- S61.** (a) Vas-deferens delivers the sperms from the testis to the urethra.
 (b) The egg is transferred through fallopian tube from ovary to uterus.

- S62.** (a) Seminal vesicles/prostate gland.
 (b) Testes.
 (c) Placenta.
 (d) Fallopian tube.

S63.	Binary Fission	Multiple Fission
	(a) The unicellular organism splits into two equal daughter cells by cell division.	(a) Unicellular organisms divide into many daughter cells.
	(b) Nucleus and cytoplasm divide simultaneously.	(b) First the nucleus divides into many nuclei and then each nuclei is surrounded by cytoplasm and the daughter nuclei are released by rupture of parent cell.
	(c) Many different patterns of division transverse and longitudinal Example: <i>Amoeba</i> .	(c) No definite pattern of division. Example: Plasmodium, malarial parasite.

S64. In vegetative propagaion a new plant can be obtained from vegetative parts such as stem, root and leaves. Examples:

- (a) Sugar cane is grown by using stem cuttings.
 (b) Leaf of Bryophyllum has buds on its margin. When it falls or touches the soil, nwe plants arise from these buds.

Two advantes of vegetative propagation:

- (a) It is the only means of propagating such plants which do not produce by seeds or produce very few seeds such as banana, orange, grape, rose and pineapple.
 (b) Many identical plants having same characters can be raised by this method.

- S65.** (a) Vegetative propagation is the process of producing a new plant using any vegetative part of the parent plant like root, stem or leves.
 (b) Stem cutting and tissue culture are two such methods.
 (c) One advantage is plants produced are exactly identical to the parent plant.

S66.	Reproduction in Hydra	Reproduction in Amoeba
	(a) It reproduces by regeneration and budding. (b) A bud develops on the parent body. (c) On maturity, the bud detaches from the parent body.	(a) It reproduces through binary fission. (b) No such outgrowth on the parent body. (c) The nucleus splits into two and cytoplasmic division follows, resulting in two daughter nuclei.

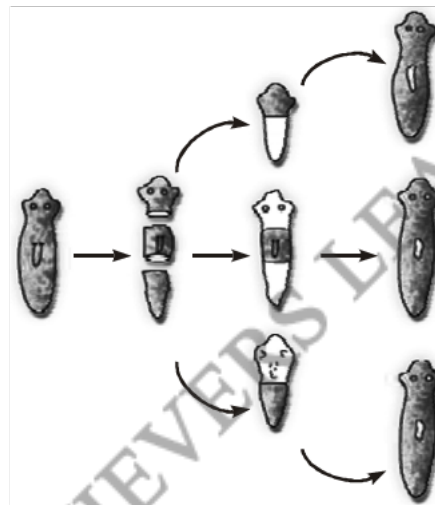
- S67. (a) The process shown in Multiple Fission. It is the process of asexual reproduction in unicellular organisms where the parent cell divides multiple times to produce many daughter cells.
- (b) Asexual Reproduction is the mode of reproduction where only one parent is involved in giving rise to next progeny.



multiple fission.

- S68. (a) Multicellular organisms with simple body design, may break into pieces. Each of this fragment can grow into a new individual. This process is known as fragmentation. *e.g., Spirogyra*.
- (b) When the pollen grains fall on the stigma of same flower, this is known as self-pollination.
- (c) Vegetative propagation is a method of asexual reproduction where any vegetative part of the plant body, like root, stem or leaf is used to give rise to new plant.

S69.



Regeneration is also seen in Hydra.

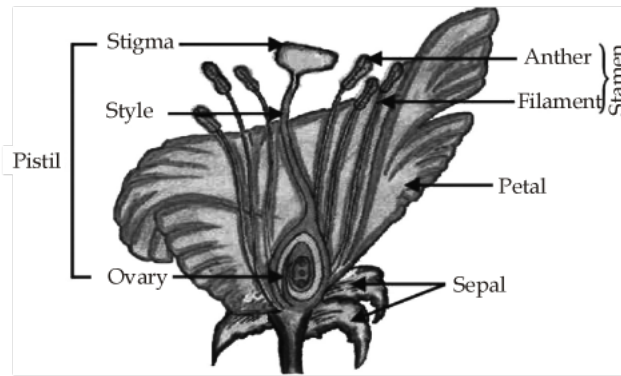
- S70. (a) Sexual reproduction promotes diversity of characters in the offsprings because it results from the fusion of two gametes.
- (b) It plays a role in the origin of new species as it allows new combination of characters.
- (c) It leads to variation, which is necessary for evolution.

S71. The transfer of pollen grains from anther to stigma of a flower of same species is termed as pollination. Pollination is of two types:

- (a) **Self-pollination:** The transfer of pollen grain from the anther of a flower to the stigma of the same flower or another flower of the same plant, is known as self-pollination.
- (b) **Cross-pollination:** The transfer of pollen grain from the anther of one flower to the stigma of another flower growing on another plant of the same species is called cross-pollination.

Agencies of pollination are - wind, water, insects, birds and animals.

S72.



Various parts of flower are:

- (a) Sepals (b) Petals (c) Stamen (d) Pistil

Sepals are the outermost part of a flower usually green in colour. They protect the flower bud.

Petals are usually coloured and showy.

Stamen is the male reproductive part and consists of a stalk called filament and a flattened top called the anther. The anthers produce pollen grains and in turn each pollen grain produce two male gametes.

Pistil is the female reproductive part and consists of a swollen ovary which contains ovules and a long tube called style which terminates at stigma.

- S73. 1. Pollen, 2. Stigma, 3. Style, 4. Pollen tube, 5. Ovary, 6. Secondary polar nuclei.

- S74. The organ that produces sperms is Testis. Hormone produced by testis is testosterone. Sperms have to swim to reach the female gamete, which is stationary. Hence, they have tails.

- S75. Organ where ova are formed is ovary. Ova are released from ovary into the fallopian tube which lead into the uterus. The ovum gets fertilised in the fallopian tube, where sperms travel to fertilise the egg from cervix, through uterus, to fallopian tube.

The fertilised egg, *i.e.*, zygote gets implanted in the uterus after fertilisation.

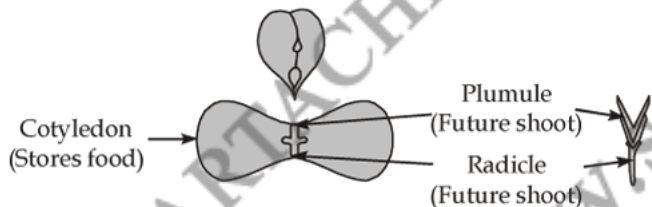
- S76. Medical termination of pregnancy (MTP) is a method that should be used only if the foetus has some defect, or if it is life-threatening to the mother. It should not be used as a contraceptive method. Thus, MTPs should be avoided.

Illegal sex should be avoided, which may also cause STDs.

- (a) It can also lead to health problems to the mother.
(b) It can also result in infections.

- S77. (a) *Leishmania*.

(b)



- S78. (a) (i) Body becomes muscular. (ii) Facial and pubic hair.
(b) **Fertilisation:** It is the process of union of male and female gamete to form zygote.
Implantation: It is the process of attachment of zygote in the uterine wall.

S79. (a)	Self-pollination	Cross-pollination
	<ul style="list-style-type: none"> • Transfer of pollen from anther of one flower to stigma of same flower. 	<ul style="list-style-type: none"> • Transfer of pollen grains from the anther of one flower to the stigma of another flower, on different plant of same species.

(b) On a suitable stigma, the pollen begins to germinate and forms a pollen tube. The tube carrying two male gametes grows through style, reaches embryo sac and fertilizes the egg to form zygote, with 1st male gamete. The 2nd male gamete fuses with the secondary nucleus resulting in Primary Endosperm Nucleus.

S80. After attaining puberty, human female produces one egg during middle of each menstrual cycle. This process is termed as ovulation. As the follicle matures to release the egg, the uterine wall thickens, in preparation for receiving fertilised egg. In case fertilisation does not occur, the thickened inner wall of uterus breaks down along with the blood vessels and comes out through vagina in the form of menstrual flow.

- S81.** (a) Placenta has villi to provide large surface area for glucose and oxygen exchange through the embryo.
 (b) Oral pills are hormonal preparations – to prevent ovulation and hence fertilisation.
 (c) Uterine linings are thick and spongy to provide protection and nutrition to embryo.

S82. The primary reproductive organ in males are testis. Testis produce male gamete and testosterone. They are located in scrotum, outside the abdominal cavity, to maintain temperature 1-3 °C lower than body temperature. This is essential for production of sperms.

The sperms are formed and delivered through vas deferens which unites with ureter coming from urinary bladder.

The prostate glands and seminal vesicles release their secretions which are essential for sperms transport and nutrition.

This opens into urethra through which both urine and sperms are released.

Hence, human male reproductive system is also called urino-genital system as urine and semen are released from same tract.

- S83.** (a) Testes and ovaries are considered as primary sex organs because both produce gametes and sex hormones.
 (b) Seed contains embryo, which is the beginning of next generation and is protected by hard seed coat. Thus, helps in maintenance of species.
 (c) Vas deferens is long to carry sperms from testes, which enter into penis for their release.

- S84.** (a) 1. Fallopian tube, 2. Ovary, 3. Uterus, 4. Cervix, 5. Vagina.
 (b) Fertilisation takes place in fallopian tube.

S85. Self-pollination: Advantage – It helps to preserve the parental characters.
 Disadvantage – It can lead to expression of hidden genetic defects.

Cross-pollination: Advantage – It results in new combinations and therefore more variation.
 Disadvantage – Dependent on external agencies for pollination.

Cross-pollination is better as it results in evolution and improved vigour.

S86. After implantation: The uterine wall thickens that is richly supplied with blood.

A special tissue called placenta develops which connects embryo to the uterine wall that provides nutrients and oxygen to it.

Placenta is a disc which is embedded in the uterine wall. It contains villi on the embryonal side. On maternal side, are blood spaces, which surround the villi. This provides large surface area for glucose and oxygen to pass from the mother to the embryo.

- S87.** (a) Insects help in transfer of pollen grains from anther to stigma while visiting flowers for nectar.
(b) Variation helps in evolution and survival of organism.
(c) Indiscriminate female foeticide, as girls are considered burden on parents in some societies.

S88. Syphilis, Gonorrhoea, AIDS, warts are sexually transmitted diseases.

These infectious diseases spread from one person to other by sexual contact with an infected person.

Fluid discharge, burning sensation while urination, sores in genital area etc., are some of the symptoms of STDs.

S89. Four methods of contraception are:

- (a) Mechanical barrier – So that sperm does not reach the egg. *e.g.*, condom.
(b) OCPS – Oral Contraceptive Pills act by changing hormonal balance so that eggs are not released.
(c) IUD – Intra uterine device like copper-T to prevent pregnancy.
(d) Surgical method – Blocking vas deferens or fallopian tube.

Since pregnancy makes major demands on body and mind of woman, so her health suffers. By contraceptive methods a woman is in better state of health to look after herself and her family. Spacing children will result in healthier and happier children and will also be more economical for the family to look after and give good life, education to fewer children.

S90. Living organisms reproduce mainly by two methods:

- (a) **Asexual reproduction:** In this mode of reproduction, the offspring arises from a single individual parent. Asexual type of reproduction takes place in unicellular organisms, some plants, and certain multicellular animals like sponges and Hydra.

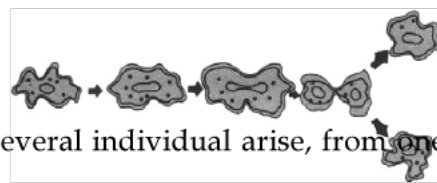
Main types of asexual reproduction are:

- (i) Fission. (ii) Budding. (iii) Spore formation. (iv) Regeneration. (v) Vegetative propagation.
(b) **Sexual reproduction:** For sexual reproduction, involvement of the two sexes, male and female, is essential. Sexual reproduction involves union of sperm (male gamete) and egg (female gamete). These gametes are produced by gonads, *i.e.*, testis in males and ovary in females.

S91. Asexual reproduction occurs in following ways:

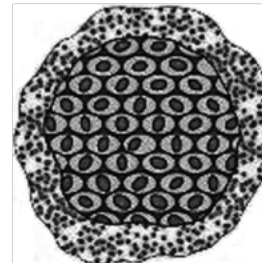
(a) **Fission:** It is the process of asexual reproduction in unicellular organisms, such as *amoeba* and *paramecium*. Fission is again of two types:

(i) **Binary fission:** During binary fission, the nuclear division takes place first, followed by division of cytoplasm into two parts. Finally two daughter cells are formed.



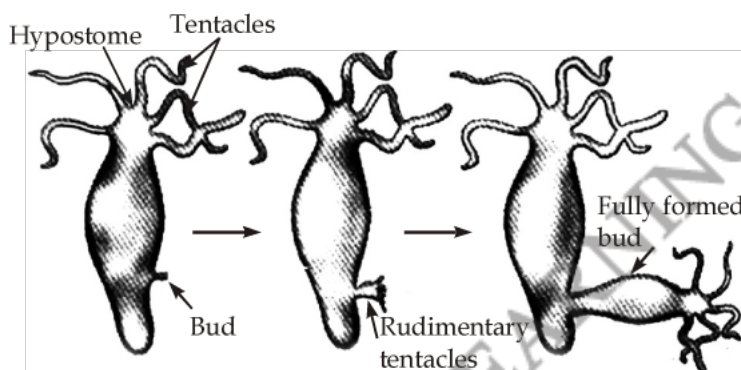
(ii) **Multi fission:** The type of fission in which not two but several individual arise, from one individual is called multiple fission.

During multiple fission, the nucleus divides several times into many daughter nuclei. The daughter nuclei arrange along the periphery of the parent cell and a bit of cytoplasm accumulates around each daughter nuclei. Finally, the daughter nuclei develops an outer membrane and the multinucleated body divides into as many parts as the number of daughter nuclei and forms daughter individuals.



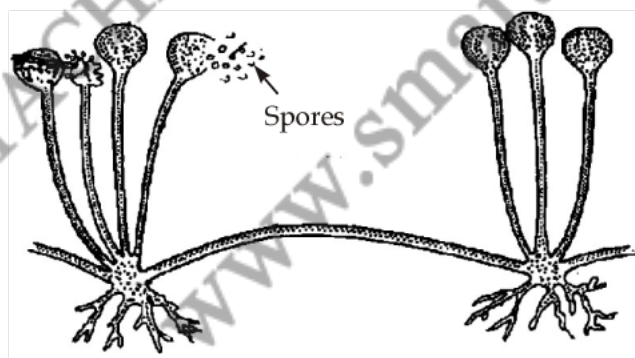
(b) **Budding:** Budding is seen in both multicellular (*Hydra*) and unicellular organisms (yeast).

In *Hydra*, a bulge in the body appears as a result of repeated mitotic division in the cells. These lateral bulges are called buds. These buds slowly develop into a new *Hydra* and get separated from the parent.



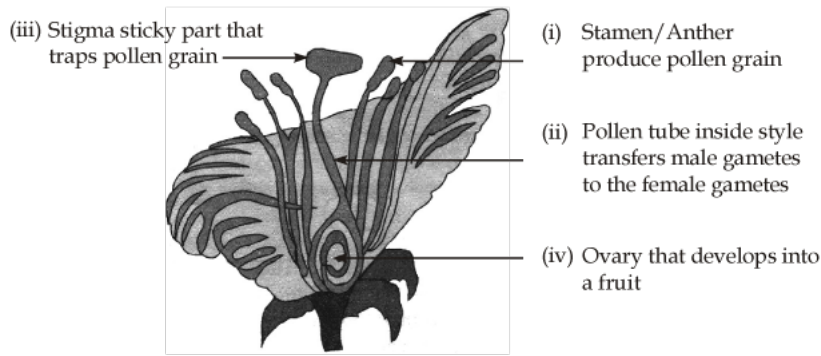
In yeast, a small protuberance appears on the upper part of an adult cell. This protuberance grows in size. From this newly budded cell, another bud appears at the tip. This process continues 3-4 times, resulting in a chain of yeast cells.

(c) **Spore formation:** Spore formation is the most common method of asexual reproduction seen in fungi and bacteria. During spore formation, a structure called sporangium develops from the fungal hypha. The divides several times within the sporangium and each nucleus with a bit of cytoplasm, develops into a spore.



The spores are liberated and they develop into new hypha after reaching the ground. e.g., *Rhizopus*, *Mucor* and *Penicillium*.

S92. (a)



(b)

Pollination	Fertilisation
(a) Transfer of pollen grain from anther to stigma.	(a) It is the process of fusion of male gamete and female gamete resulting in formation of zygote.
(b) Pollination facilitates formation of pollen tube which carries male gamete to the ovule.	(b) Zygote later develops into seed which contains embryo.
(c) Occurs only in higher plants.	(c) Occurs in plants as well as in animals.

S93. (a) Placenta is a special tissue having disc like shape which remains embedded in the uterine wall. It contains villi on the embryo side of the tissue. On the mother's side are blood spaces which surrounds the villi. This provides a large surface area for glucose and oxygen to pass from the mother. The developing embryo also generate waste substances which can be removed by transferring them into the mother's blood through placenta. Apart for it placenta also secretes certain hormones which maintain the pregnancy.

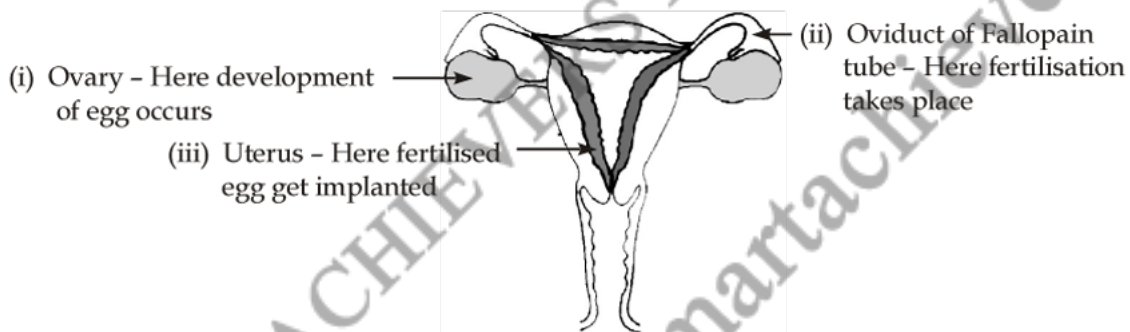
(b) Bacterial diseases transmitted through sexual contact:

- (i) Gonorrhoea (ii) Syphilis

Viral diseases:

- (i) Warts (ii) HIV-AIDS

S94. (a)



- (b) (i) The zygote gets implanted in the uterus which thickens its walls and increases blood supply.
 (ii) If zygote is not formed, the lining of the uterus slowly breaks and is shed alongwith blood and mucus and comes out throug vagina in the form of menstrual flow.

S95. (a)

- (i) Male gametes (sperms) and male hormone testosterone are produced by testis.
 (ii) Sperm formation requires a lower temperature than the normal body temperature. This temperature is 1-3 °C lower than the temperature of the body. Testis are located outside the abdominal cavity, in the scrotum to provide right temperature.
 (iii) The sperms formed are delivered through the vas-deferens which unites with a tube coming from the urinary bladder.
 (iv) The prostate glands screte the fluids which provides nutrition to the sperms and make their transport easier.

(b) They require a lower temperature than the human body temperature for the formation of sperms.

S96. (a) Sexual reproduction involves gametes from two different individuals. Thus, their genetic make up is different.

It leads to formation of greater variation, so better adaptability and evolution.

- (b) (i) '1' is Pollen grain and '2' is Stigma.
 (ii) Pollen grains reach stigma due to pollination, which may be with the help of external factors like wind, water, insects and birds or on its own.
 (iii) '4' is ovary, which stores food and converts into fruits.
 (iv) '3' is pollen tube that carries male gametes.

S97. (a) Placenta is the connection between maternal blood and growing foetus. It provides it nutrition, respiratory gases, removal of its wats etc.

- (b) By blocking vas deferens, the sperms do not get passage to move out, thus no fertilisation.
 (c) Wind transpotrs pollen from anther to stigma of another flower.
 (d) Condoms prevent entry of sperm in vagina, therby preventing fertilisation.
 (e) By blocking fallopian tube, the egg is not carried out, sperms do not reach it, so no fertilisation.

S98. (a) Intra Uterine Contraceptive Device (IUCD) like copper-T prevents implantation.

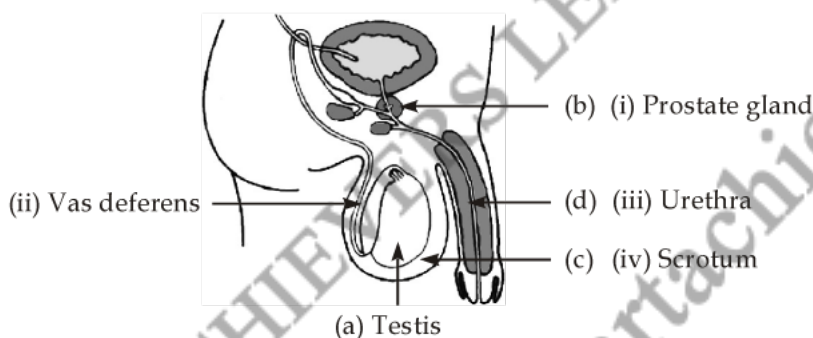
(b) Selective Medical Termination of Pregnancy (MTP) of female foetus using amniocentesis is the main reason behind decline female-male sex ratio in our country. This is because many sections of our society considered girl child as a burden.

Measures to achieve 1 : 1 ratio.

- Generating awareness about girls being equal helping hands in the family income.
- Banning prenatal sex determination tests.
- Banning certain ill practices in our society like dowry system.

- (c) (i) Testis - Anther (ii) Ovary - Ovary
 (iii) Egg - Female gamete/Egg. (iv) Sperms - Male gamete in pollen tube.

S99. (a)



Sexually transmitted disease - AIDS.

- Prevention:** (i) By using physical barrier like condom.
 (ii) Avoiding multiple sex-partners.

S100.(b)

Pollen grains	Ovule
• The contain the male gametes.	• Ovules contain female gamete.

- (b) (i) Ovary - Involved in production of ova and female sex hormone extrogen.
 (ii) Fallopain tube - Receives ovum after ovulation and is the site of fertilisation.
 (ii) Uterus - Embryo gets implanted and its development till child birth takes place here.

S101.(a) The process of fusion of male gamete with a female gamete to form zygote is termed as fertilisation.

(b)

External fertilisation	Internal fertilisation
<ul style="list-style-type: none"> • When a male gamete fertilizes an egg outside the female body. • The respective gametes are released outside the body. • No special copulatory organs involved. 	<ul style="list-style-type: none"> • The male gamete fertilizes an egg inside the female body. • The male gametes are released inside female body. • Copulatory organs are involved.

(c) Fallopain tube.

(d)

Reproduction in human beings	Reproduction in Amoeba
<ul style="list-style-type: none"> • Have sexual mode of reproduction. • Two individuals are involved. • Special reproductive organs are present. 	<ul style="list-style-type: none"> • Shows asexual mode of reproduction. • Only one parent cell is involved. • No separate reproductive organ present.

S102.(a) Testosterone perform function of production of sperm and development of secondary sexual characters in males.

(b) When pollen falls on suitable stigma, it germinates to produce the pollen tube that carries two male gametes for fertilisation.

(c) When egg fuses with sperm cell, it result in formation of zygote.

(d) *Planaria* when cut, each piece is capable of developing into a complete new individual by regeneration.

(e) Buds formed on the notches of Bryophyllum leaf are capable of forming new plants by vegetative reproduction.

S103.(a) (i) Ovary (ii) Fallopain tube (iii) Uterus

(b) As soon as zygote is implanted it starts dividing. The embryo gets nutrition from mother's blood with the help placenta. This provides surface area for exchange of glucose and oxygen to go to embryo and removal of wastes from it.

S104.(a) A - Pollen grain, B - Pollen tube, C - Ovary, D - Female gamete.

(b) The transfer of pollen from anther to stigma of suitable flower is pollination.

This results in fertilisation and hence formation of next generation.

(c) After pollination, the pollen germinates to form pollen tube that carries male germ cells. It grows to reach embryo sac. Where these germ cells are released and fertilisation takes place.

(i) Embryo sac forms seed. (b) Ovary forms the fruit.