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CHAPTER-7
HOW DO ORGANISMS REPRODUCE

REPRODUCTION

Process by which living organisms produce new individuals similar to themselves.

Necessity

* It promotes continuity of life.
* It promotes stability of species.
* Includes creation of variation that are basis of evolution.
* Regulates population.

Reproduction

Asexual

Single individual involved.
Gametes are not formed.
New individual is identical to parent.
Adopted by lower organisms.

Sexual

Two individual involved
Gametes are formed.
Genetically similar, not identical to parents.
Adopted by higher organisms.

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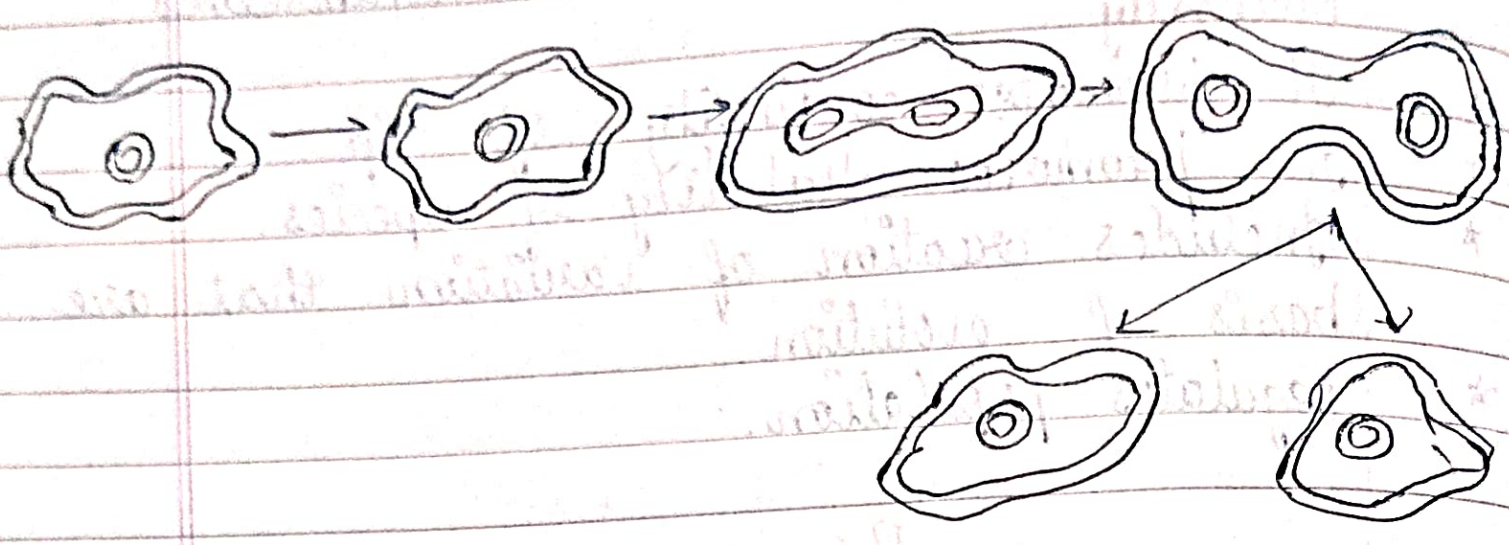
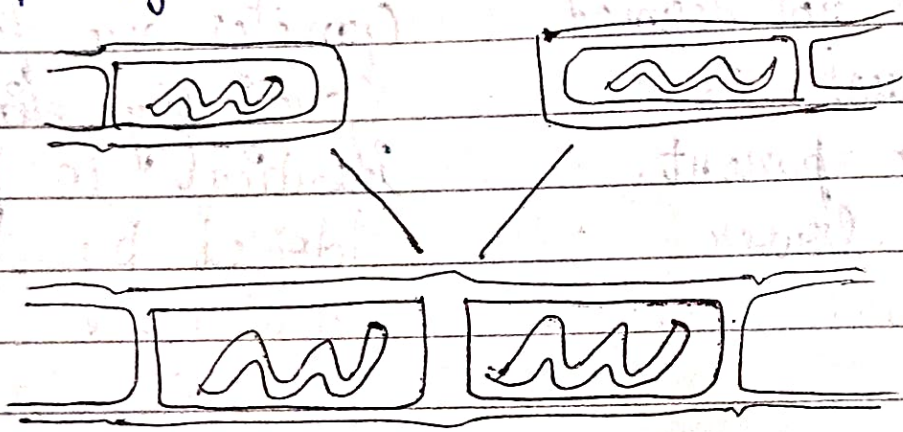
TYPES OF ASEXUAL REPRODUCTION

1. Fission : parent cell → daughter cells.
   i) Binary fission - 2 cells formed, Amoeba, Leishmania
   ii) Multiple fission - Many cells formed, plasmodium, yeast



2. Fragmentation :
   Breaks-up into smaller pieces upon maturation
   Spirogyra.



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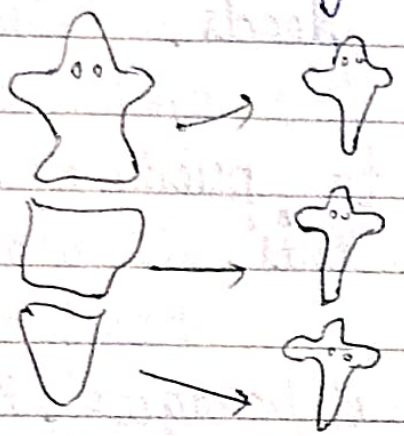
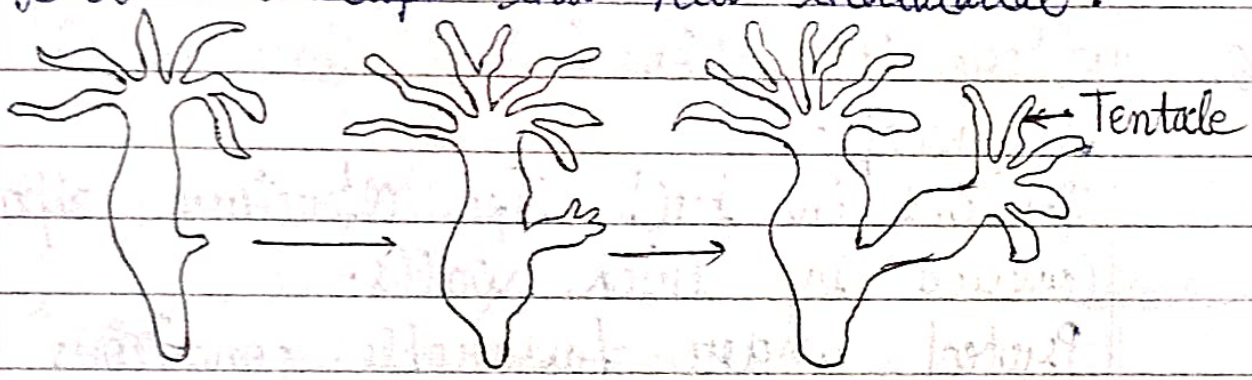
3. Regeneration :
Cut → pices → complete organism .
Planaria , Hydra



4. Budding :
Bud → develops into new individual .



5. Vegetative Propagation :
Plant grow from vegetative part of plant like stem , leaves , roots .
Sugarcane , roses , jasmine , grapes .

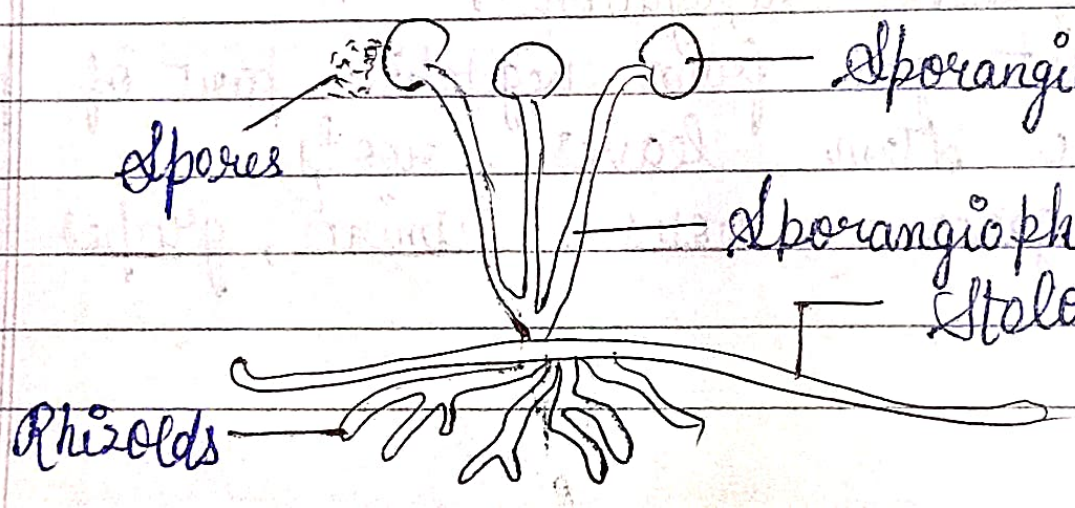
Advantages of Vegetative Propagation

Vegetative reproduction → bear flowers and fruits earlier than seeds.

Plants lost capacity to produce seeds, can be propagated by this.

Roots → Dahlia, Asparagus, Lily
Stem → Money plant, Jasmine, Rose, potato
Leaves → Bryophyllum

6. Spore Formation:
Microscopic
Present in bulb like structure Sporangia.
Covered by thick walls.
Protect under favourable conditions.
Germinate to produce new plants.



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Tissue Culture

* Plants grown by removing tissue or separating cells from growing tip of the plant.
* Placed in artificial medium, they devide → small group of cells or callus.
* Transferred to another medium containg hormones for growth & differentiation.
* Then → into soil → can grow mature plants.
* Ornamental plant, orchid.

Benefits of tissue culture

* Grow plants like banana, rose, jasmine lose capacity to produce seeds.
* Genetically similar → parents.
* Helps in growth of seedless fruit.

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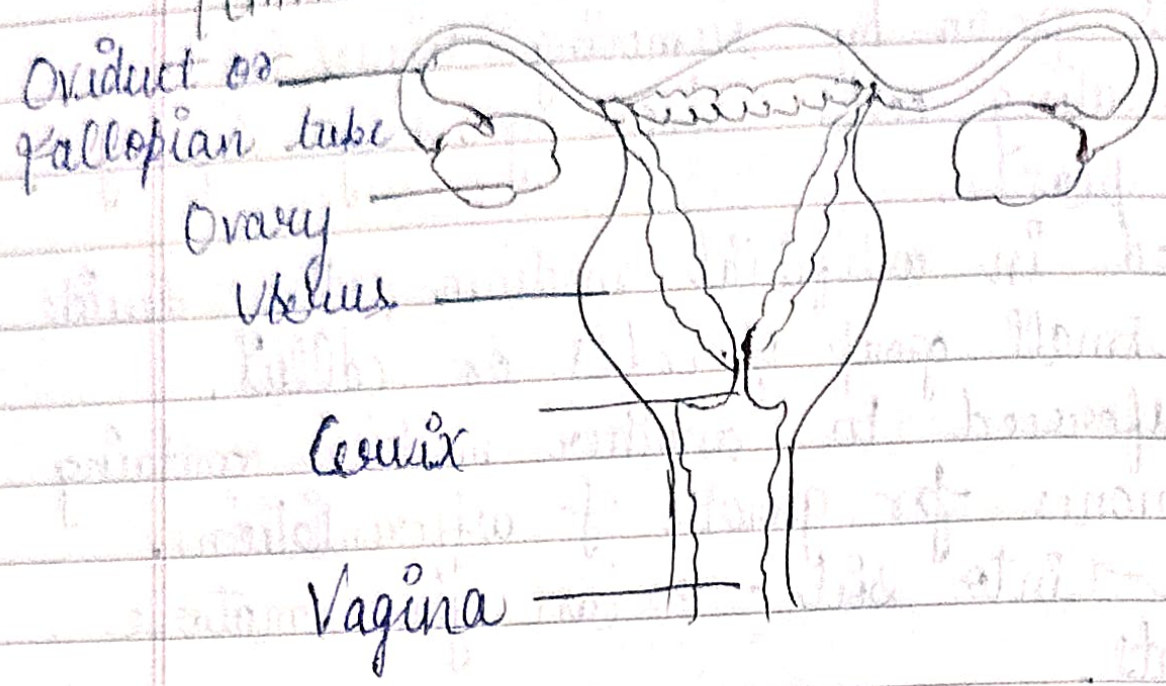
SEXUAL REPRODUCTION IN HUMANS

FEMALE REPRODUCTIVE SYSTEM



Ovary : produce female gamete ova
Produce oestrogen & progestone

Fallopian tube : site of fertilisation

Uterus : Zygote multiples to form an embryo & gets implanted in uterine wall.

Vagina : Opening → male gamete enters in female reproductive system

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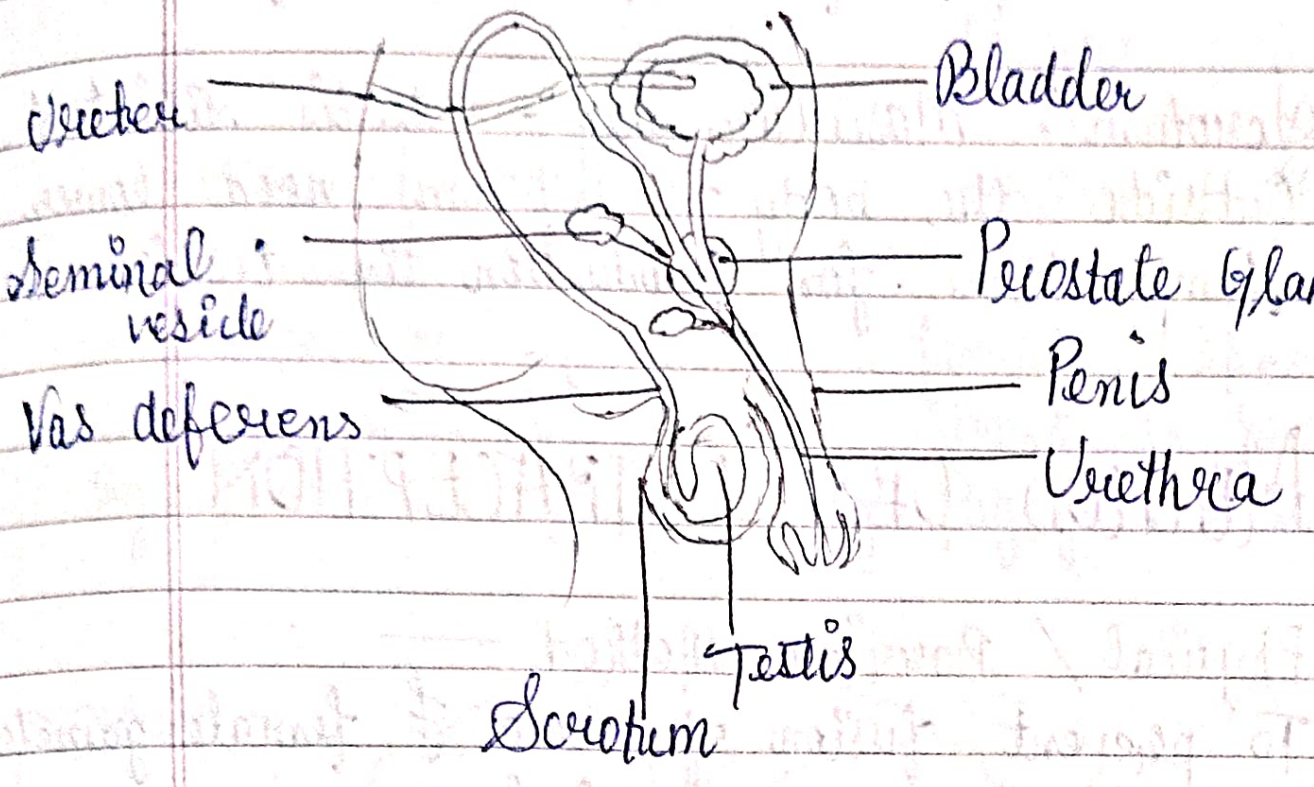
MALE REPRODUCTIVE SYSTEM



Testis : Produce male gamete sperms
Produce testosterone controls secondary sexual characteristics.

Vas Deferens :
Seminal vesicle
Prostate Gland
Cowper's Gland
} Take sperm from testis
Secretions provids nutrition to the sperms
Provides lubrication

Semen : Combination of sperms & the secretion from prostate, cooper's gland & seminal vesicle.

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Penis : Transfer sperm to female R.S.

Scrotum : Masculare bag → testis situated. Outside the body → sperms need lower temperature for production in testis.

METHOD OF CONTRACEPTION

→ Physical / Barriere Method —
To prevent fusion of male & female gamete
Use of condoms, cervical caps.

→ Chemical Method —
Use of oral pills → change hormonal balance of body so eggs are not released.

→ Surgical Method —

* VASECTOMY : Vas deferens is cut & tied so sperms are not released. (Male)

* TUBECTOMY : Fallopian tube is cut & tied so ova is not released. (Female)

* IUCD : Copper loop (copper T) is placed in the uterus which avoids pregnency.

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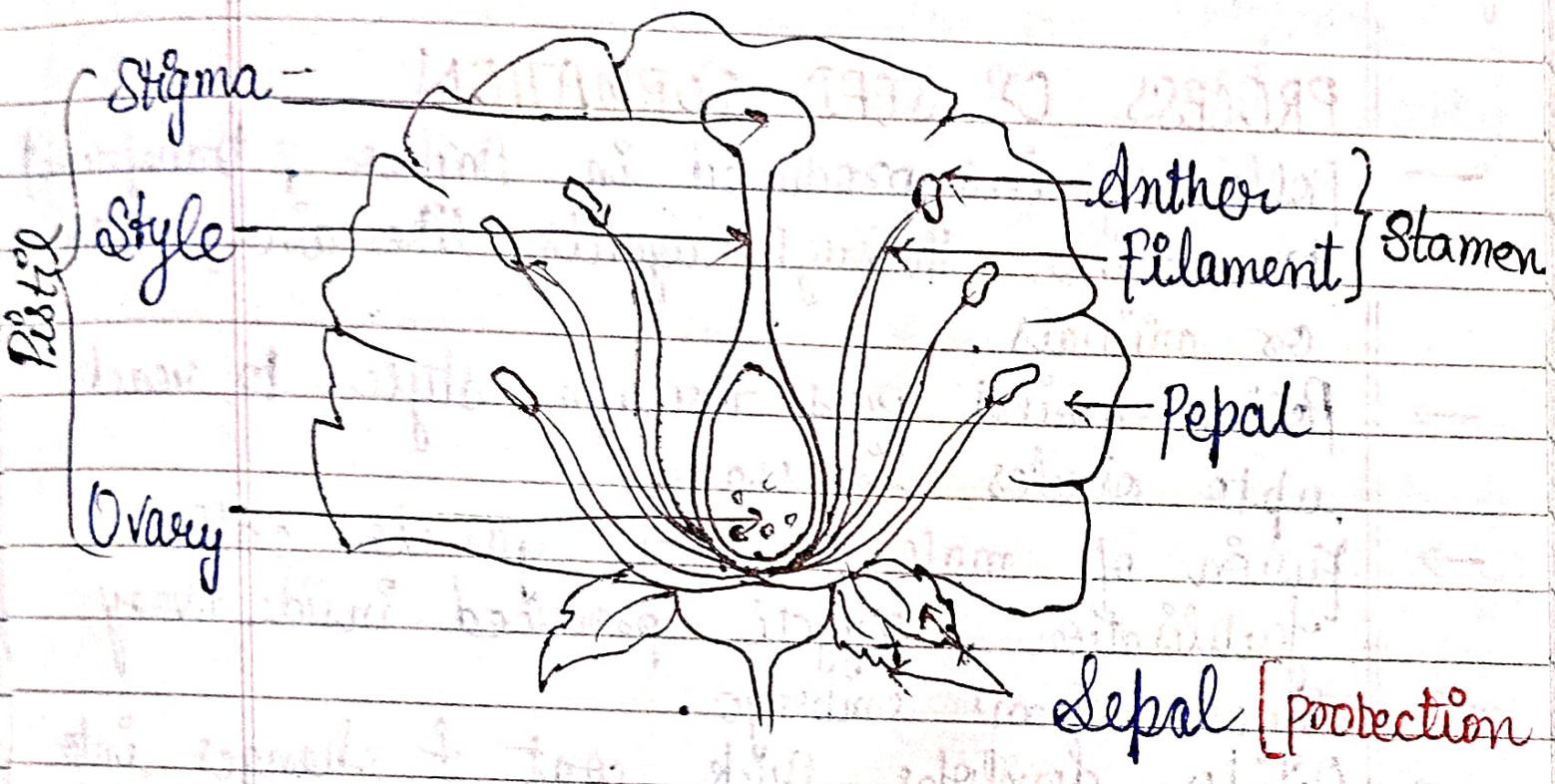
SEXUAL REPRODUCTION IN PLANTS

Types of flowers

Bisexual flower
Male & female reproductive parts are present.
Eg: Mustard, Hibiscus

Unisexual flower
Only one male or female reproductive part is present.
Eg: Papaya, watermelon.



Female reproductive germ cell → Ovule
Male reproductive germ cell → Pollen grains

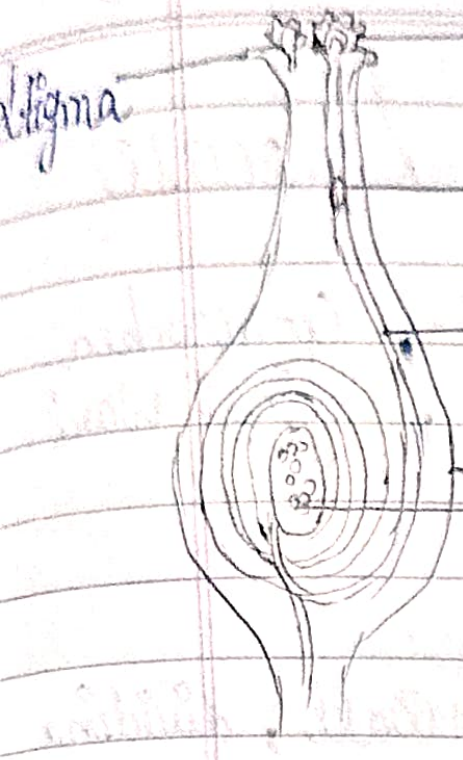
Pollination [transfer of pollen grains anther to stigma]

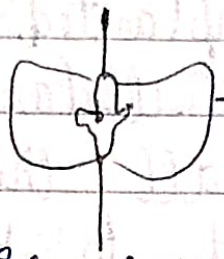
Self-pollination
Anther → stigma of same flower or another flower of plant.

Cross-pollination
Anther → Stigma of one flower to another.

PROCESS OF SEED FORMATION

→ Pollen grains produced in Anther, transferred to stigma through agents like air, water or animals.
→ Pollen grains pass through style to reach upto ovules in ovary.
→ Fusion of male & female gamete called fertilisation, Zygote produced inside ovary
→ Zygote forms embryo.
→ Ovules develops thick coat & changes into seed gradually
→ Ovary changes into fruit & other parts of flower fall out.


Stigma
Pollen grain
Male germ cell
Pollen tube
Ovary
Female germ cell


Plumule [future shoot]
Cotyledon
[food store]
Radicle [future root]

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Sexually Transmitted Disease

Bacterial diseases — Syphilis, Gonorrhea
Viral diseases — HIV- AIDS, Vigina Wart.

If egg is fertilised:

→ Zygote implanted to uterine wall; dividing into multicellular structure.
→ Uterine wall thickens & richly supplied with blood to provide nutrition for embryo.
→ Special tissue Placenta develops to provide nutrition to the mother's body.
→ Villi provide large surface area for glucose & oxygen.
→ Gestation period - 9 months.

If egg is not fertilised:

→ Uterus prepars itself to reciere fertilized egg. Lining of uterus becoms thick & spongy to support embryo.

→ When fertilisation don't occur, this lining not needed longer.
→ Lining breaks and comes out through vagina as blood & mucus.
→ Cycle takes 28 days every month and called menstruation.

Changes at Puberty

COMMON — Thick hair growth.
Skin becomes oily result pimples.

IN GIRLS — Breast size increase.
Girls begin to menstruate.

IN BOYS — Thick hair growth on face.
Voice becomes to crack.