**REPRODUCTION IN PLANTS AND ANIMALS**

1. Prophase
2. Integuments, triploid nucleus
3. - Blood entering placenta has more oxygen, more food substances, less nitrogenous wastes and less carbon dioxide.
   - Blood leaving placenta has less oxygen, less food substance, more carbon dioxide and nitrogenous wastes.
4. Corpus luteum in the ovary secretes progesterone, which maintains pregnancy/development of uterus after four months pregnancy is maintained by progesterone form placenta.
5. - Protandry / protogyny / male and female parts mature at different times
   - Stigma positioned higher than stamen
   - Incompatibility /sterility.
6. - Presence of special structures that attract agents of pollination.
   - Protandry /protogyny
7. - To increase the chances of fertilization and survival of species.
8. a) Wind
   b) To enable it trap pollen grains in the air.
9. - Blood transfusion
   - Use of unsterilized instruments / sharing (contaminated) instruments.
   - Infected mother to foetus; infected mother to newborn.
10. Bring about change or genetic material, which leads to variation that enables organisms to exploit new environment resistance to disease.
11. - Lack of variations

- Lack of hybrid vigour
- Disadvantageous traits are retained within species.

12. a) Meiosis

    b) Ovary

    c) n- gametes

    2n- parents

13. a) i) Conditions where other floral parts arise / positioned above the ovary / inferior ovary.

    ii) Male flower

    b) - Large anthers loosely attached to the filament to be easily shaken in the wind.

    - Small / smooth / light pollen grains – easily carried by wind.

14. a) Ovule

    b) Ovary

15. a) - Sister Chromates separates.

    - Chromatids start moving to opposite poles with centromere first.

    b) - Ensure that gametes formed have half the number of chromosomes found in original cell.

    - Formation of sex cells.

    - Leads to variation of genetic material during crossover.

16. a) i) Protoandry Stamens with pollen grains matures before carpel (stigma) of the same flower.

    ii) Self-sterility Pollen grain of anthers cannot grow into pollen tube on the stigma of the same flower.

b) - Mixing of genetic composition of different plants.

- Offspring produced has high yield.

- Offspring is more resistant to disease and adverse conditions.

17. a) Amnion

b) i) – Umblical vein

- Umblical artery

ii) – Umblical vein – rich in nutrients and oxygen.

- Umblical artery – rich in $CO_2$ and waste like urea.

c) - Has thin membrane to reduce diffusion distance.

- Has villi which increase surface area for exchange.

- Highly vascularized.

d) - Cushions foetus against shock

- Supports the foetus

- Keeps foetus moist (prevent dehydration)

18 a) i) Anaphase I

ii) - Homologous chromosomes separate at the equator.

- Chromosomes start migrating to opposite poles

- Sister chromatids attached at the centromere.

b) Spindle fibers.

19. - Harmful characteristics from the parents may be passed on to the off springs.

- Takes a longer time

- Few offsprings are produced at a time.

20. a) i) Protandry Stamens mature and pollen grains are shed off before the

stigma matures.

ii) Self sterility Pollen grains from the anthers cannot grow on the stigma of the same flower or plant.

b) i) Q- Antipodal cells

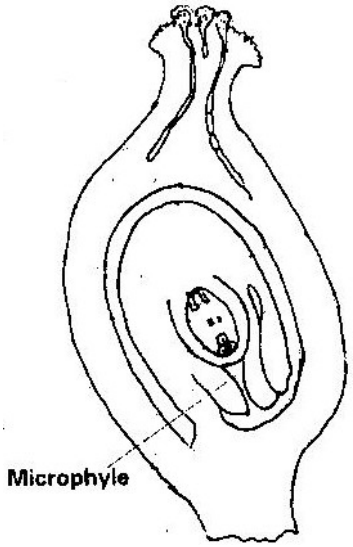
R- Polar body / polar nucleus

S- Egg cell

ii) Path through which the male gametes reach the embryo sac to enhance fertilization.

iii) Prevent other pollen grains from developing into pollen tubes hence no multiple fertilization of embryo sac.

c)




21. a) i) Large brightly coloured corolla / inflorescence / forests / tracts to attract insects.

ii) Scented to attract insects

iii) Have secreted nectar to attract that direct flowers secrete nectar to attract insects.

iv) Pollen grains rough/spiky sticky surface to stick on insect's body.

v) Special shaped corolla tube to enable the insect land.

b) i) Repair / heal endometrium / wall of uterus, which is destroyed in menstruation. Stimulates pituitary gland to produce the luteinising hormone

ii) Stimulates the thickening of the uterus, increases the blood supply to the endometrium. Inhibits the production of follicle stimulating hormone

iii) Responsible for maturation of the graafian follicle / causes ovulation. Stimulates corpus luteum to secrete progesterone.

22. - Interior lobe of pituitary glands secretes follicle stimulating hormones (FSH). FSH causes Graafian follicle to develop in the ovary. It also stimulates tissues of ovary / all of graafian follicle to secrete oestrogen.

- Oestrogen causes repair /healing of uterine wall; oestrogen stimulates interior lobe of pituitary to produce Luteinsing Hormone which causes ovulation. It also causes graafian follicle to change into corpus luteum and stimulates corpus luteum to secrete progesterone.

- Progesterone causes proliferation of uterine wall in preparation for implementation. Oestrogen/progesterone inhibits the production of FSH by interior lobe of pituitary thus no more follicles develops and production reduces.

- In the next two weeks, progesterone level lowers and inhibits production of LH

from interior lobe of pituitary.

- The corpus luteum stops secreting progesterone and menstruation occur when the level of progesterone drops. Interior lobe of pituitary start secreting FSH again.

23. i) It forms a large surface area for the diffusion of nutrient from the maternal blood to the foetal blood. Glucose, amino acids and salts are transferred.

ii) The placenta isolates the foetus from the higher blood pressure of the mother and from direct connection of the two blood systems. Excretion materials can easily pass from foetus to mother.