10. Reproduction in (a) plants (b) animals

1. a) i) integuments ;

ii) Primary endosperm nucleus;

b) This is fruit development without fertilization;

2. - Secretion of progesterone and oestrogen;

- Controls exchange of material between maternal and foetal blood;
- Prevents entry of pathogens from the maternal to the foetal circulatory system;

3. – Sexual intercourse with infected persons;

- Transfusion with infected blood;
- sharing contaminated needles;
- Infected mother to child through breastfeeding;
- Contact with infected blood/body fluids through cuts or wounds; (mark the first 3 points)

4. (a) Par thenocapy;
(b) Ethylene;
(c) Promoted differentiation of adult features;

5. – Site for fertilization;
- Conducts on a from ovary to the uterus;

6. (a) X – Polar nuclei; Y – Egg cell;
(b) – Results to variation; that makes the plant to be adapted for survival;

7. (a) Chiasma; reject – chiasmata

(b) (i) Provide a chance for the exchange of genes (along the portion of chromosome);
(ii) Meiosis;

8. (a) When they can freely interbreed to produce fertile/viable offspring;

(b) Is the occurrence of two distinct reproductive forms in the life cycle of an organism; the
diploid sporophyte phase and the haploid gametophyte phase;

9. (a) Acquired characteristics are not inherited/inherited characteristics are found in
reproductive cells only;
(b) Mutations bring about variation which when advantageous can be passed on from one
generation to the next; and this can lead to emergence of new species;

10. (a) Gaseous exchange; means through which foetus get nutrients from the mother;
offers a means for elimination of wastes by the foetus; supplies antibodies to the embryo
from the mother; secrets progesterone hormone that maintains pregnancy;
(b) because testerrone is transported through the blood

11. – Protandry

- Protogyny;
- Self sterility/incompatibility

12. – Ability to pollinate;

- Ability to photosynthesis;
- Ability to disperse seeds/fruits;
- Ability to absorb water and mineral salts from the soil;

13. (a) Fusion of one male nucleus with an egg cell to form a diploid zygote; and fusion
of the other male nucleus with two polar nuclei to form tripoid endosperm;
(b) – Are brightly coloured to attract insects
- Have seed coat that is resistant to digestive enzymes
- Have hooks for attachment to passing animals
- Are freshly/succulent to attract insects

14. a) Oxytocin;

b) Progesterones;
on different individual plants;
-some plants are self –sterile in their pollen grains transferred to stigmas in the same plant fail to germinate;
-in some plants stamens and carpel on the same plant mature at different times;
-in many plants the stigmas are located higher than the anthers;

15. -some plants are dioecious which means that staminate and distillate flowers are borne

16. a) A – Has umbilical vein and artery to supply foetus with nutrients and removal of waste
products; √

B – Protects embryo from shock/regulate temp. of developing embryo/ suspends and supports
embryo;
b) Foetus head is turned towards the cervix; √

c) To supplement iron synthesized by the mother since it (iron) is needed for haemoglobin
formation in the foetus; √

17. i) Marginal; √

ii) Free central; √

18. a) Cypsela b) Animal

19. i) Production of the hormones progesterone and oesterogene continues;

ii) These hormones inhibit the production of follicles;
Stimulating hormone (FSH) and lutenising hormone (LH);
iii) This inhibits the maturation of more follicles;

20. a) It brings about useful variations which make the off springs better adapted for survival b) i) 33;
ii) 11;

21. a) A – Antipodal cells; B - Embryo sac; D- Synergid ;
b) Double fertilization

22. They cannot freely interbreed to produce a viable /fertile offspring OR- do not have hereditary
distinction to interbreed to produce a fertile viable offspring;

23. Adverse temperature , wind/air current, pH, light noise ;

24. (a) (i) Epigynous –a condition where other floral parts arise/positioned above the ovary
/inferior ovary

(ii) Staminate flower – Male flower (accept – has stamen only / male parts only);
(b) Meninges;

25. (a) Yeast ; (b) Budding;

26. – Through breast feeding if mother's nipple and baby's mouth have rushes/wounds
- During delivery;
- During pregnancy;

27. a) Production of spindle fibres

b) i) Absorbs light energy; which is used to break down water molecules into O_2 gas and
H^+/ atoms ;

ii) Glucose;

28. a) Prophase I ; Reject prophase alone

b) i) There is crossing over of genes that leads to variations;
ii) Leads to formation of gametes;
Brings about genetic variation;
It helps retain a constant diploid chromosomal constitution in a species at fertilization;

29. a) Stamens hanging outside the flower; large anthers loosely attached to flexible filaments;
Large amounts of small; light and powdery pollen grains to be easily blown by the coid;
b) Monoecious plants have both male and female flowers bone on separate plants;

30. a) Inability of seeds to germinate despite all the conditions necessary for germination are
provided;

b) Scarification;
Increase the concentration of hormones which stimulate germination/ increase auxin conc;
Allow the embryo to mature before planting seeds;
Remove germination inhibitors;

31. a) Allows the adult to reproduce;

Allows the species to disperse in order to colonize new habitats;
b) Leads to the formation of the larval cuticle;

32. - Hot water kills organisms in the water;

- Reduces oxygen content in the water leading to suffocation;
- Chemicals in the element may lead to entrophication;

33. - Chances of fusion of gametes are low

- Large amounts of gametes are produced leading to wastage
- Changes of survival of the young ones are low since there is lack of parental care

34. - Allow nutrients to pass from mother to Foetus

- Allow diffusion of excretory products from Foetus to mother's blood for excretion
- Produce hormones Oestrogen & Progesterone / that retains pregnancy.

- Prevents passage of foreign particles e.g. pathogens.

35 . a) i) prophase I

ii) Chiasmata Formation / cross over

b) _Ovary

- Anthers

36. - Ensures no competition for dispersal;

- Survival of pupa stage;

37.

Mitosis	**Meiosis**
- Two diploid daughter cells are formed	- Four haploid daughter cells are formed;
- No crossing over	- There is crossing over because of chiasmata; formation;
- Takes place in one cell division	- takes place in two cell division;
- Leads to growth	- leads to gamete formation
- Takes place in somatic cells	- takes place in reproductive cells;

38. Due to (stiff)competition for available resources which leads to elimination/exclusion;

39. i) healing and repair of the uterine wall following menstruation stimulates the pituitary

Gland to secrete L.H; (award any one)

ii)-cause ovulation

-changes the remnants of graafian follicle to corpus uteum;

-initiates secretion of progesterone; (award any one.

iii)-accelerates growth and maturity of graafian follicle;

-stimulate the graafian follicle to secrete oestrogen; (award any one.)

40. (a) A - Syncarpous: B- Apocarpous; Rj: Wrong spellings

(b) A fused ovaries B — separate ovaries:

(c) Hinder self pollination? fertilization:

41.

Sperm	Ovum
- Spear shaped.	- Spherical shaped
- Posses a tail.	- No tail
- Has acrosome .	- No acrosome
No vitelline membrane.	- Has vitelline membrane.

42. (a) anthers; (b) – tube nucleus;

- Generative nucleus;

43. (a) – Metaphase 1; rej. Metaphase.

(b) - Homologous chromosome arranged on the equator;.

- Spindle fibres formed and attached at the centromere of the chromosome;

44. Progesterone;

45. - Seed dormancy allows the plant to escape harsh conditions of the environment
- It also allows time for the seed to disperse;
- Seed dormancy allow time for the seed to fully mature (after ripening period);

46. (i) - A fruit has two scars while a seed has a single scar
- Fruits are covered by epicarp while seeds have seed coats/testa

(ii) Biological control helps to prevent pollution f the environment

47. (a) Site for sperm formation (b) For nourishment of sperm cells /support

48. (a) Ovary; anther (b) Small/light/smooth

49. - Self sterility;
- Dioecious plants;
- Protandry and protogyny;

50. In birds the embryo develops externally. It is totally dependent on food stored in the egg for its nourishment; In mammals the embryo receives nourishment from the mother through the placenta

51. Pollination is the transfer of pollen grains from an anther to a stigma;
Fertilization is the fusion of the nucleus of a male gamete with the nucleus of a female gamete to form a zygote;

52. a) Water dispersal

- Such seeds and fruits enclose air in them to lower their density for buoyancy;
- They are fibrous/ spongy to lower the density for buoyancy;
- Have impermeable seed coat or epicarp to prevent water from entering during flotation so as to avoid rotting;
- The seeds can remain viable while in water and only germinate while on a suitable medium;

Wind dispersal - They are light; and small; to be easily carried by wind currents due to lower density;

- Have developed extension which create a larger surface area; so as to be kept afloat in wind currents e.g. * Parachute like structures;

* Wing like structures;

Animal dispersal - Brightly colored to attract animals
-Fleshy to attract animals;
- Some have hook like structures to attach on animals fur

Self dispersal - They have weak lines on the fruit wall along which they burst open to release
seeds, which get scattered. This occurs when temperature changes suddenly

b)

- The zygote formed when egg nucleus fuses with one male nucleus develops into the embryo of a seed
- The triploid nucli develops into the primary endosperm of the seed
- The inner and outer interguments develops into the seed testa
- The ovary wall differentiates into epicarp, mesocarp and endocarp forming a fruit
- The ovule then develops into a seed
- The corolla dries up and withers away
- The calyx may persists shortly as it photosynthesis but afterwards , shrivels, dries and withers away
- The Androecin shrivels,dries and withers away
- The stigma together with the style shrivels, dries and withers away

53. Wind dispersal.

- Parachute of hair, increase surface area to be carried by wind /float
- Wing like structures, increase surface area to be carried by wind /floats.
- Small/light, seed/fruits to be carried by wind have censor mechanism/split open particularly and shaken by wind to throughout the seeds.

Animal dispersal

- Juicy/succulent/fleshy, to attract animals; hooked; to stick on animals bodies and be carried away.
- Hard seed coat; to resists digestive enzymes. Hence come out a long with feaces/dropping of animals.
- Brightly coloured; to attract animals that carry them away.
- Scented; to attract animals that eat and scatter their seeds.

Water dispersal;

- Fibrous fruit wall/mesocarp with air spaces to store air hence make them buoyant/float in water;
- Air floats make them buoyant/float on water.
- Self dispense mechanism
- Fruits dry and crack/open violently along the lines of weakness throwing away the seeds.

54. (a) Pituitary gland

(b) (ii) Testerone
(iii) Follicle stimulating hormone
(v) Leutinising hormone

(c) Sterility/lack of spermatogenesis. Failure of secondary sexual characteristics.

(d) Inhibit production of F.S.H
Inhibit production of L.H

55. (a) I – F.S.H (Follicle stimulating Hormone);

II- Lutenizing Hormone (LH);
III. – Androgen/Testerone/male Hormone

(b) Progesterone;- brings about protogenetion/development/thickening of uterine wall;

(c) A – Inhibition of L.H
B – Stimulation of L.H

(d) – Growth of hair on the armpit and pubic region; - Development of pimples on the face;

56. (a) Role of spleen in human defense mechanism:-

- Form lymphocytes which ingest pathogens present in the blood;
- Produce antibodies; which neutralizes poisons produced by the pathogens

(b) Ways of controlling HIV spread:
- Testing and transfusing blood free form the HIV
- Avoid sharing of cutting instruments (OWTTE) any two

(c) Meaning of the word Acquired Immuno Deficiency Syndrome:
- Development of lack of immunity system resulting to various chains of infections

(d) Reason for encouraging vaccination prevent/control infection which is better/cheaper than
treatment

(e) Is acquired when an individual is infected and naturally produces immunity and recover
from the infection

57. Seeds and fruits are adopted to the various methods of dispersal:-
Water dispersed fruits and seeds;

- Mesocarp fruits has air spaces thus light/buoyant to float; therefore carried away by water; seeds are protected from soaking by water proof pericurp / testa;

Animal dispersed fruits/seeds;
Presence of hooks for attachment to animals thus carried away to other places; fruits are also brightly coloured;
-Succulent; aromatic /scented to attract animals; the seed coats are hard and resistant to digestive enzymes; the seeds are therefore dropped away in feaces/droppings'

Self dispersed seeds/fruits/explosive mechanism;

- The dry pods/fruits splits along line of weaknesses/sutures; scattering seeds away form parent plant;

Wind dispersed fruits/seeds;

- censer mechanism; open/split; to disperse the seeds. Perforated capsule is usually loosely attached to stalk / long stalk is swayed away by wind scattering seeds;
- Presence of hairs /wing-like structures/floss/extension which increase surface area for buoyancy; making it easy for fruits/ seeds to be blown away;
- Fruits /seeds are light due to small size; therefore, easily carried away by wind;

58. a) A- Ovary

B- Oviduct/ fallopian tube
C- Uterus/ uterine wall
D- Cervix

b) Produce ova
Produce femme hormones/ Estrogen and progesterone

c) - Highly vascularized to supply nutrients to foetus/ drain away excretory wastes
- Inner wall lined with Endometrium for implantation of fertilized egg/ zygote
- Muscular for peristalisis to expel menses during menstruation/ parturition
- Great capacity to expand during gestation to accommodate developing foetus

d) -copulation/ Achieve orgasm in Human male followed by ejaculation
- birth canal

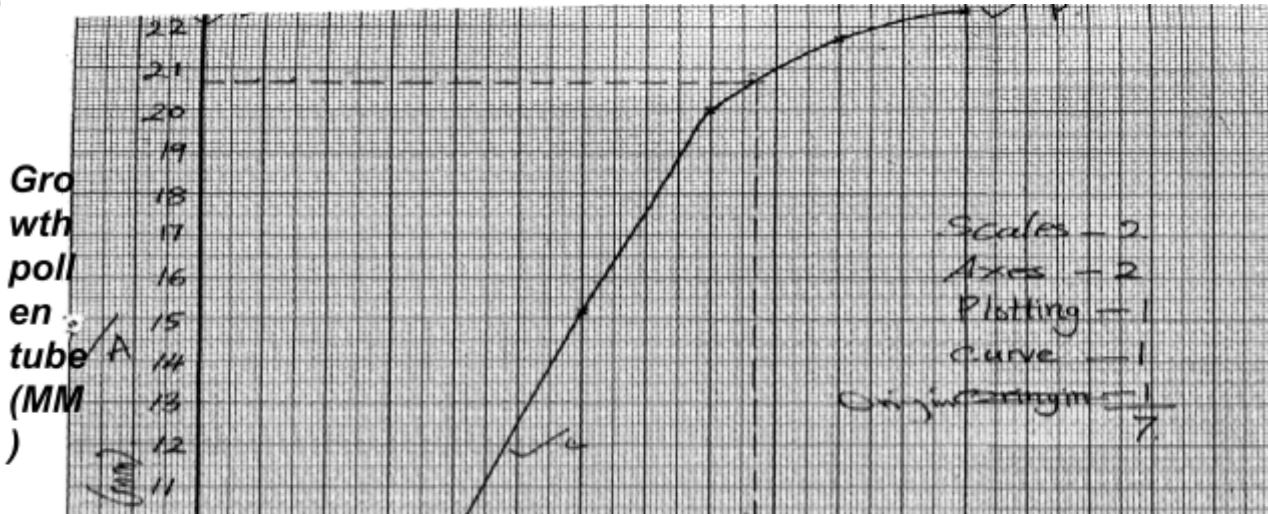
59 . a) chorion; Rej Amnion/Amniotic membrane.

b) i) A: (umbilical Artery; Rej Arteriole
B: (umbilical vein; Rej venule
ii) More food nutrients; more oxygen in umbilical vein/less food nutrients; more excretory products in umbilical Artery;
Rej.(ii)if (i) is wrong
Rej oxygenated/deoxygenated

c) highly vescularized;
-large surface area; acc. Numerous villi for large surface area
-presence of secretory cells/are glandular; any 2 Rej. Source of hormones.

d) cushion /absorbs shock/buoyancy;

60. (a)



b) i) 30min/aftter every 30min; Rej if no units
ii) 20.4 -20.8mm;
iii)105min-106min; Rej after 105/106 min.
iv) 0 + 120minutes
growth fast/growth rapid /rate of growth rapid/growth rate pattern rapid;
Rej. Exponential growth
reason: pollen tube young/has enough nutrients in culture;
to 180 minutes- grows slowly /rate of growth decline /decrease/growth rate pattern decrease;
reason: pollen tube mature/old/has exhausted nutrients;
v) directs role gametes/nuclei/nucleus to ovules; Rej. Ovary/pollen grains for male gametes.

c) integument develop/changes to-seed coat/testa;
zygote-embryo;
triploid nucleus-endosperm;
ovary wall- pericarp;
ovary- fruits;
ovules-seeds;
corolla/petals/style/stamens/filament-dry out /fall off /wither(losing a scar);
calyx may persist(dry up &fall off) Rej. die/disappear.