

REPRODUCTION IN PLANTS AND ANIMALS MARKING SCHEME

1. 1989 Q5 P1

Hormone	Site of Production	Function
Oestrogen	Ovary	Initiate and control development of secondary sexual characteristics
Aldosterone	Adrenal gland	Mineral metabolism

2. 1989 Q10 P1

-Prophase

3. 1990 Q5 P1

Integuments...., triple fusion nucleus/triple nucleus

4. 1990 Q8 P1

-Blood entering placenta has more oxygen,more food substances, less nitrogenous wastes and carbon dioxide.

-Blood leaving placenta has less oxygen,less food substances,more carbon dioxide and nitrogenous waste.

5. 1991 Q3 P1

Corpus luteum in the ovary secretes progesterone which maintains pregnancy/development of uterus after conception,after four months pregnancy is maintained by progesterone from placenta.

Acc:- oestrogen and progesterone. Rej:- Oestrogen alone

6. 1991 Q12 P1

- i) Hydra – Budding
- ii) Moss(funaria)- Spore formation

b) Retention of useful characteristics;offspring establish faster/shorter life cycle;better chance of survival because of suitable environment

- c) –Grafting
- Budding

Acc. Cuttings as in sweet potatoes/sugarcane,cassava etc.

Layering must be accompanied by at least examples.

7. 1992 Q8 P1

-Protandry/protogyne/male and female parts mature at different times
dichogamy; stigma positioned higher than stamen;

- Incompatibility/sterility

8. 1993 Q11 P1

a) A- Metaphase

B- Anaphase

C-Telophase

b) –Retention of chromosome number; give rise to new cells

Rej:- Increase in size for growth.

- Asexual reproduction/binary fission.(multiple fission)

c) –Root tip; Shoot tip; Cambium

9. 1995 Q16 P1

(a) (i) Large; brightly coloured corolla/ inflorescence/ florets/ bracts
to attract Insects

(ii) Scented to attract insects

(iii) Have nectary guides/ nectarines/ that directs insects/ secrete
nectar to attract insects.

(iv) Pollen grains rough/ spiky/ sticky/ surface; to stick on insects body

(v) Special shaped corolla tube; to enable insects to land

(vi) Anthers are situated inside the flowers to ensure that they are in
contact with the insect

(vii) Sticky stigma; for pollen to stick or to adhere

(b) (i) Oestrogen

Repair/ heal endometrium/ wall of uterus; which is destroyed in
menstruation

(ii) Progesterone

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

(iii) Luteinising hormone

Responsible for maturation of the graafian follicles/ causes ovulation/
stimulates corpus luteum; to secrete progesterone.

10. 1996 Q2 P1

- Sexual transmitted

- Blood transfusion
- Sharing needle/syringes/ razors

11. 1996 Q9 P1

-Presence of special structure that attract agent of pollination protandry; protogyny; monoecism; self – sterility.

12. 1996 Q12 P1

-To increase the chances of fertilization and survival of species

13. 1996 Q22 P1

-Lower plants/example Bryophyta/pterophyta; produces spores which develops to new plants; budding an overgrowth arises from plant drop off; and develops into a new plant; common in lower plants yeast.

- Fragmentation – e.g Spirogyra; breaks off and grows into a new plant
- Vegetative propagation: common in higher plants involves growth of new plants from buds/bubils
- Root stem/ tubers/ leaves: possesses buds; which develops to new plants
- Corns; have terminal buds that grows vertically and produce a new plant
- Runners; have lateral buds that produce new plants

14. 1997 Q17 P1

- (a) Figure 1 R:
Figure 2T: Accept growth
- (b) Development of the foetus/zygote/fertilized/ova/egg/embryo
- (c) Style
- (d) R;P;
- (e) X

15. 1998 Q8 P1

- (a) Wind
- (b) To enable it trap pollen grains in the air; reject catch/ attach for trap

16. 1998 Q11 P1

- Use of unsterilized instrument;
- Temperature decreases depth
- Blood transfusion

- Mother to the foetus/ mother to baby infant/ breast milk/ sharing of instruments e.g needles syringes, razor blade e.t.c
- Mixing of infected blood through cuts

17. 1998 Q13 P1

(a)

Meiosis	Mitosis
(i) Reduction/ having chromosomes/ haploid no. of chromosomes cells.	Maintenance of chromosomes number/ diploid no. of chromosomes/ cells
(ii) Takes place in reproductive cells/ glands gamete formation	In somatic cells/ body cells/ for growth
(iii) Crossing over takes place/ variation	No crossing over no variation
(iv) 4 daughter cells 2 division processes	2 daughter cells 1 division processes

b) X or / x and Y; Rej XY, X alone, XX

Ova?

X/XX

18. 1999 Q3 P1

Brings about change of genetic materials; which leads to variations; that enable organisms to exploit new environments/resistance to disease/high yields in plants

19. 1999 Q8 P1

Lack of variation;

Acc. No Hybrid Vigour

Disadvantages traits/are retained within the species

20. 2000 Q9 P1

The adult and larvae exploit different food/ don't compete for food/ pupa can survive adverse conditions/ pupa being a non- feeding state enables organisms to go through adverse conditions

21. 2000 Q16 P1

(a) Genetic variation/ hybrid/ crossbreed

(b) Favourable characteristics of parent remained

- Exploit parents favourable conditions

Acc. New plants adapts parental favourable conditions

- Short life cycle/ early maturity/ faster reproduction

- Large store of food supply

-Independent of two parental/ organisms reproduces without another fertilization/ pollination

22. 2000 Q18 P1

Inferior lobe of pituitary gland secretes F.S.H which causes graafian follicle develops in the ovary. It also stimulates ovary tissue/ ovary/ follicle walls secret oestrogen which repairs, heals uterine wall, oestrogen stimulates inferior lobe of pituitary gland produce L.H. for ovulation.

It also causes graafian follicle change into corpus interm L.H stimulates corpus luteum secret progesterone which causes proliferation of the uterine walls; in preparation of implantation; oestrogen/ progesterone inhibits the production of F.S.H (by anterior lobe of pituitary) thus no more follicle develop; and oestrogen production reduces; 14 days later progesterone level rises inhibits production of L.H from anterior lobe of pituitary gland produce L.H for ovulation. It also causes graafian follicle change into corpus interm L.M stimulates corpus luteum secret progesterone which causes proliferation of the uterine walls in preparation of implantation; oestrogen/ progesterone inhibits the production of F.S.H (by anterior lobe of pituitary) thus no more follicle develop; and oestrogen production reduces; 14 days later progesterone level rises inhibits production of L.H from anterior lobe of pituitary gland/ The corpus luteum stops secreting progesterone, and menstruation occur when the level of progesterone drops; (anterior lobe of pituitary starts secreting F.S.H again.

23. 2001 Q4 P1

– ovary/ accept ovules

24. 2001 Q18 P1

a) Pollen grains stick in the stigma surfaces; that surface of stigma produces a chemical substance; which stimulates the pollen grain to produce a pollen tube / germinate. The pollen tube/ germinate. The pollen tube grows down (into the tissues of style) from where it derives nutrients; the generative nucleus divides to give rise to two male nuclei and the antipodal cells; when pollen tubes disintegrates and make nucleus fuses with the egg cell and forms the zygote. The other male nucleus fuses with the two polar nuclei to form a triploid nucleus. The process involves double fertilization.

b) Integument change into seed coat / testa; Zygote into embryo;

Ovary wall into fruit; Ovule into seed; triploid nucleus into endosperm

Style dried up / fall off leaving a scar / corolla dries up (falls off) stamens dry 'up. Ref; Degeneration disintegrates.

25. **2002 Q13 P1**
- a) Meiosis
 - b) Ovary
 - c) Parent must be the $2n$ top; any 'n' is a gamete
 - d) Non – dysfunctions
 - e) Increased yields / highbred Vigor, Resistance decreases
Resistance to drought.

26. **2002 Q17 P1**
- (a) Bulbils/ suckers, Aerial tubers
 - (b) Plant with desired qualities is able to grow on an established root system which lack desired qualities
 - (c) Early maturity/ short life span
Good qualities of parents are retained
Independent of fertilization/ pollinated dispersal
Large areas covered in a short time have large store of food

27. **2003 Q3 P1**
- By pollen tube that grows through style

28. **2003 Q19 P1**

Water dispersed fruit / seeds

- Mesocarp / seed has air spaces thus light / buoyant to float.
Therefore carried away by water.
- The fruit / seeds are protected from soaking by water proof pericarp.

Animal dispersed fruits / seeds

- Presence of hooks for attachment to animals; thus carried to other places
- Fruits are brightly coloured; succulent; aromatic attract animals, which feed on them.
- The seed coats are resistant to digestive enzymes; thus carried to other places on them.
- The seeds are dropped always from parent plant in faeces/ droppings.

Self dispersed fruits / seeds / explosive mechanisms

- The dry pods / fruit split (along lines of weakness / sutures)

- Scattering seeds away from parent plant

Wind dispersed fruits / seeds

- Perforated capsule is usually loosely attached to stalk / the long stalk is swayed by wind scattering seeds.
- Presence of hairs / wing – like structure, floss / extensions 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.

29. 2004 Q5 P1

Prophase 1

30. 2004 Q11 P1

Parthenocarpy

31. 2004 Q15 P1

(i) Insect

Wind

Small short anther firmly attached to elements

Large/ long anthers/ loosely attached to filaments

(ii) Large heavy/ spiky

small/ light/ smooth

(iii) Small/ sticky

Long feathery

Reject short stigma/ negative comparisons

(b) Source of variation/ hybrid acc. Production of hybrid

Rej heterosis/ vigour

32. 2005 Q15 P1

a) i) A flower whose ovary is situated below the other floral parts.

ii) A flower with only the male reproductive parts (male flower)

b) -Larger anthers.

-Anther loosely attached

- Flexible filament

-Small, smooth and light pollen grains

33. 2006 Q2,9 P1

2. (a) Ovule

(b) Ovary

9. (a)- Sister chromatids separate

- Sister chromatids move to opposite poles of spindle fibre
Accept chromatids separate at the centromere to mean chromatids

(b) - Gamete formation; accept sex cells formation
- Source of variation; rej. Reproduction cells

34. 2006 Q19 P1

(a) (i) Protoandry – Male reproduction organ/ anthers androecia/
stamens mature earlier than female reproduction organ/ carpels/
stigma/ pistil/ gynoecium.

(ii) Self sterility- pollen grains are sterile to stigma of some plants/ flowers

(b)– Increases variety;
- Hybrid vigour/ heterosis
- Resistance of disease/ drought/ dry climate/ unfavorable environmental
conditions/ Frost; E.g. resistance to virus, fungi, bacterial diseases of pest.

35. 2006 Q5 P2

(a) Chorion
(b) (i) Arteries; veins
(ii) More food nutrients; more oxygen in veins less food nutrients
more excretory products in arteries
(c) Highly vascularized; large surface area
- Presence of secretory cells
(d) Cushion/ absorb shock

36. 2007 Q17 P1

(a) Anaphase 1
(i) Homologous chromosomes separate at the equator
(ii) Chromosomes start migrating to opposite poles
(i) Sister chromatids attached at the centromere
(b) Spindle fibres

37. 2007 Q18 P1

Harmful characteristics from the parents may be passed on to the offspring
- Takes a longer time
- Few offspring are produced at a time

38. 2007 Q26 P1

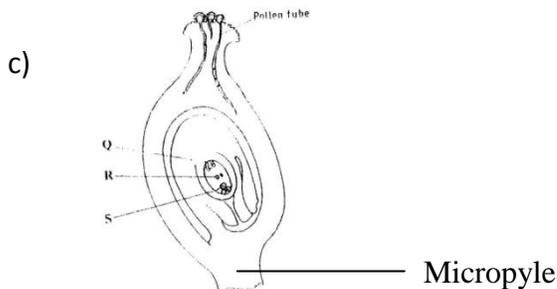
State one way by which HIV/AIDS is transmitted from mother to child
During birth, breast feeding

39. 2007 Q3 P2

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



40. 2008 Q8 P1

- (a) Anaphase
 (b) Chromatids fails to separate off poles
 Sister chromatids separate/ pair of chromatid separate
 (c) Root tip/ shoot/ cambium

41. 2008 Q1 P2

- (a) Oestrogen
 Progesterone
 (b) Promotes healing (promotes repair (of the uterus)
 Causes thickening (of the uterine lining) vasculature
 (c) (i) Leutinizing hormone rej LH
 (ii) Causes ovulation
 Induces graafian follicle to become corpus iterum
 Stimulates corpus inteum to release progesterone
 (d) 12th, 16th, 14 + 2

42. 2009 Q8 P1

- (a) The placenta takes the role of the ovum to producing the hormone progesterone (which maintains pregnancy)
- (b) - Production of gametes/spermatozoa; *Acc: male gamete /male sex cell*
 - Produces progesterone hormone which maintains pregnancy; /
Acc: male sex hormone

43. 2009 Q7 P2

Insect Pollination / Entomophilous Flowers

- Are scented to attract insects, have sticky stigma for pollen grains to stick on. Are brightly coloured to attract insects.
- Have nectarines to secrete nectar, nectar attracts insect
- Have nectar guides to guide the insects to the nectaries
- Stigma / anthers are located inside the flower / tubular a funnel shaped corolla to increase chances of contact by insects
- Sticky / spiky pollen grains which stick on the body of insects and on stigma
- Large / conspicuous flowers to be easily seen by the insect / attract
- Anthers firmly attached to filament for insect to brush against
- Have landing platform to ensure contact with anther and stigma
- Mimicry to attract (male) insects / flowers mimic female insects which attract male insects for mating e.g. orchids (13 marks)

WIND POLLINATED / ANEMORPHILOUS FLOWERS

- Anthers / stigma hang outside the flowers to increase chances of pollination; style / filament is long to expose stigma / anthers
- Stigma is hairy / feathery / branched to increase surface area over which pollen grains land / to trap pollen grains
- Pollen grains are smooth / dry / light / small to be easily carried by wind; large amount of pollen grains to increase chances of pollination
- Anthers are loosely attached to filaments to enable them sway easily to release pollen grains; pollen grains may have structures which contain air to increase buoyancy 3 flowers have long stalks holding them out in the wind.

44. 2010 Q22 P1

- (a) Passage of ova/ site of fertilization
- (b) Storage of sperms
- (c) Hold the testis/ protect the testis

45. 2010 Q7 P2

Pollen grains land onto the stigma and adhere to it as a result of the stigma cells secreting a sticky substance. It absorbs nutrients; & germinates forming a pollen tube; the pollen tube grows down the style to the ovary; deriving nourishment from surrounding tissue. The pollen tube has tube nucleus at the tip; and generative nucleus immediately behind it; As the tube grows downwards into the ovary the generative nucleus divided (by mitosis) mitotically, to give rise to two nuclei; which represent the male gametes; the pollen tube penetrates the ovule/ embryo sac/ chalaza through micropyle. After the pollen tube enters the embryo sac the tube nucleus breaks down/ disintegrates/ degenerates; leaving a clear passage for the entry of the male nuclei. The (two male) nuclei then enter into the embryo sac; where one fuses with the egg cell nucleus (Acc; egg cell/ ovum/ oosphere, to form a diploid zygote; which develops into an embryo. The

other male nuclei fuse with the two / both polar nuclei; to form a triploid nucleus/ primary endosperm nucleus; which becomes the endosperm. This (type of fertilization) is called double fertilization; Acc vegetative nucleus for tube nucleus.

46. 2011 Q26 P1

Egg / ovum

47. 2012 Q15 P1

Androgens

48. 2012 Q16 P1

The flower/plant is self sterile/not successfully self pollinated. The covering prevents pollination in flower P; flower Q received pollen grains from other plants/cross pollination

49. 2012 Q17 P1

Carbon (IV) oxide; nitrogenous waste

50. 2012 Q25 P1

Ecdysone hormone; cause metamorphosis(forwards adult stage)/ cause moulting/ecdysis

Juvenile hormone; maintains larval characteristics/cause formation of larval cuticle/inhibits moulting/metamorphosis;