



KSEAB PYQ K (2020)

Kannada

BOTANY

1. How many chromosomes are there in meiocytes of human beings?
2. Name the inducer which regulates the switching on and off of the lac operon.
3. Which type of R.N.A. polymerase enzyme transcribes precursor m.R.N.A.?
4. Name the part of the flower which develops into the fruit after fertilization.
5. Write the scientific name of the fungus which produces cyclosporin A.
6. What are Pioneer species?
7. Which bacteria is commonly found in the anaerobic sludge during sewage treatment?
8. Name the International treaty which controls the emission of ozone-depleting substances.
9. Define endemism.
10. What are Euryhaline organisms?
11. Name the scientist who found out D.N.A. and what was the name given by him?
12. Mention the genotype of the parents when their children are with A, B, AB, O blood groups.
13. What are the two types of disorders of humans where the Karyotype is 47?
14. Write the two basic amino acid residues which are rich in histones.
15. Schematically represent the phosphorus cycle.
16. What is ecological succession? How is Hydrarch succession different from that of xerarch succession?
17. Alien species invasion caused the decline or extinction of indigenous species. Justify the statement by giving three examples.
18. Define Autogamy. Write the two different kinds of flowers that exhibit autogamy.
19. Explain a mature embryo sac with a neat labelled diagram.
20. Schematically represent the inheritance of two genes in pea plants with reference to seed colour and shape.
21. Mention five salient features of the human genome project.
22. Explain the biogas plant with a neat labelled diagram.
23. Mention the population interactions exist among the following:
 1. Abingdon tortoise and goats in Galapagos islands.
 2. The cuckoo lays eggs in a crow's nest.
 3. Sea-anemone and clownfish.
 4. Wasps laying eggs in fig fruit.
 5. Orchid Ophrys and bees.
24. Write a note on the following:
 - (a) Remedy for plastic waste.
 - (b) Radioactive wastes.



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Hint & Solution

1. (46)

2. 0

Lactose.

3. 0

RNA polymerase II.

4. 0

Ovary.

5. 0

Trichoderma polysporum.

6. 0

The species that invade a bare area is Pioneer species.

7. 0

Methanogens/Methanobacterium.

8. 0

Montreal protocol.

9. 0

A species native to a particular region and found nowhere else in the world is called an endemic species.

10. 0

Euryhaline organisms which tolerate a wide range of salinities.

11. 0

Friedrich Mischer. The name given is 'Nuclein'.

12. 0

I^{Ai}, I^{Bi}.

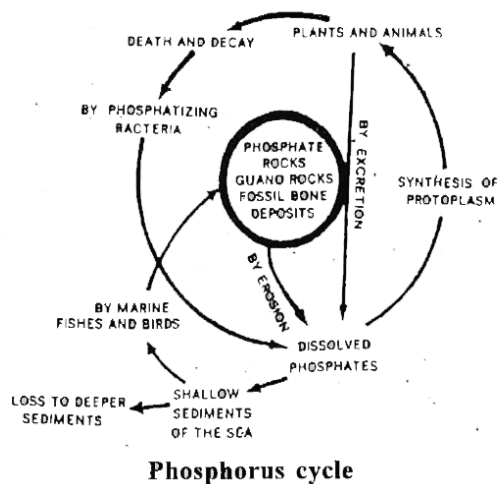
13. 0

Down's syndrome and Klinefelter's syndrome.

14. 0

Lysine and Arginine.

15. 0



16. 0

The gradual and fairly predictable change in the species composition of a given area is called ecological succession.

- Hydrarch succession: Takes place in wetter areas and the successional series progress from hydric to the mesic conditions. It involves stages like pioneer stage, submerged stage, floating stage,



reed swamp stage, marsh meadow stage, woodland stage, and forest stage.

- Xerarch succession: Takes place in dry areas and the series progress from xeric to mesic conditions. The stages include crustose lichen stage, foliose lichen stage, moss stage, herb stage, shrub stage, and tree stage.

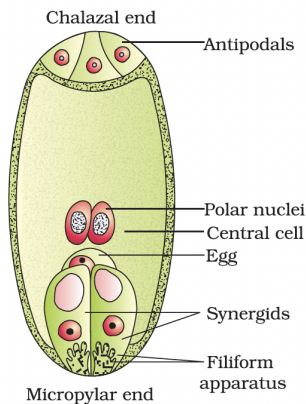
17. ()

1. Introduction of Nile Perch into Lake Victoria in East Africa led eventually to the extinction of more than 200 species of cichlid fishes in the lake.
2. Introduction of African catfish *Clarias gariepinus* for aquaculture purposes is posing a threat to the indigenous catfishes in our rivers.

18. ()

When the pollen grains pollinate the stigma of the same flower it is called autogamy. E.g.: *Commelina*, *Oxalis*.

19.



Embryo sac: It is the female gametophyte present in the ovule towards the micropylar end. It consists of three antipodal cells towards the chalazal end, secondary nucleus at the centre and egg apparatus towards the micropylar end. Egg apparatus consists of a central egg cell and two lateral synergid cells.

20. ()

It is a cross between two plants differing in 2 pairs of contrasting characters (Dihybrid cross).

- Parents: Round yellow seeds (RRYY) $\times$ Wrinkled green seeds (rryy).

- F1 generation: All RrYy (Round yellow).

- F2 Phenotypic ratio: 9 : 3 : 3 : 1 (9 Round Yellow, 3 Round Green, 3

Wrinkled Yellow, 1 Wrinkled Green).

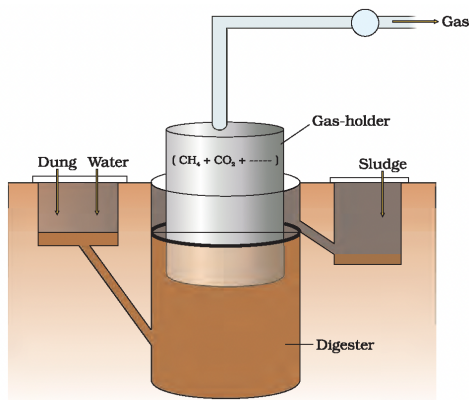
Phenotype	Round seed coat and yellow cotyledon		Round seed coat and green cotyledon	
Genotype :	RrYy		RrYy	
Gametes :	RY	Ry	rY	ry
F ₂ :	YYRR	YYRr	YyRR	YyRr
	YYRr	YYrr	YyRr	Yyrr
	YyRR	YyRr	yyRR	yyRr
	YyRr	Yyrr	yyRr	yyrr

21. ()

1. Identified nearly 30,000 to 35,000 genes of human DNA.
2. Identified 3164.7 million nitrogen bases in the human genome.
3. Average gene has 3000 bases; the largest (dystrophin) has 2.4 million bases.
4. All humans are 99.9% identical.
5. Chromosome 1 has the most genes (2968), and Y has the least (231).
6. Only 2% of the genome codes for proteins.

22. ()

Biogas is a mixture of gases (predominantly methane) produced by microbial activity. Methanogens (like *Methanobacterium*) grow anaerobically on cellulosic material to produce methane, CO₂, and H₂. Plant details: A concrete tank (10–15 ft deep) collects bio-waste and slurry of dung. A floating cover rises as gas is produced. Gas is supplied via pipes, and spent slurry is used as fertilizer.



23. ()

1. Competition
2. Brood Parasitism
3. Commensalism
4. Co-evolution
5. Sexual deceit

24. ()

- (a) Plastic waste: Polyblend (recycled modified plastic) is mixed with bitumen to lay roads. It increases the water-repelling property and road life by a factor of three.
- (b) Radioactive wastes: Radiation causes mutations and high doses are lethal or cause cancer. Storage must be done in shielded containers, buried 500 m deep below the earth's surface.