TIME : 90 Minutes MAX. MARKS : 35

# JKBOSE PATTERN TEST PAPER CLASS - XII SUBJECT BOTANY SOLUTIONS

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Section A: Q1 Answer part B
Section A: Q2 Answer part B
Section A: Q3 Answer part A
Section A: Q4 Answer part C
Section A: Q5 Answer part C

Section B:

Q6. Difference between Autogamy and Geitonogamy.

ANSWER:

| | Autogamy | | Geitonogamy |
|---|---|---|---|
| (1) | Pollination of a flower by its own-pollen | (1) | Pollination of a flower by pollen grain of another flower present on same plant |
| (2) | No pollinating agent is required | (2) | Pollinating agent is required |
| (3) | It is a type of self-pollination | (3) | From genetical point of view it is similar to self-Pollination |

Q.7. What is pleiotropic gene?

ANSWER:

A Gene which controls more than one character.

It produce multiple phenotypic expression.

Pleiotropic gene affects the metabolic pathways resulting in diffrent phenotypes.

eg, Phenylketonuria:-

caused by mutation in gene coding for enzyme phenylalanine hydroxylase. Affected individual shows mental- retardation and reduction in hair and skin pigmentation.

Q.8: What are ecological pyramids? Draw pyramid of energy.

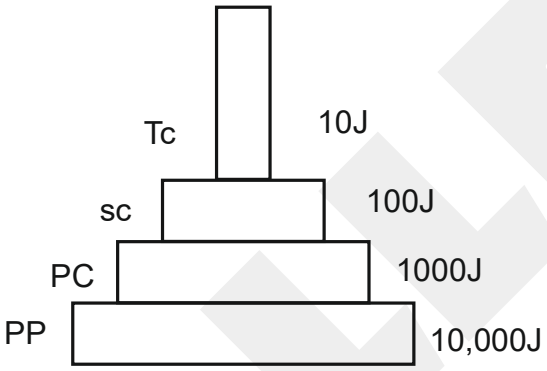
ANSWER

It is the relationship between producers and consumers at different tropic levels in an ecosystem can be graphically represented in the form of pyramid called ecological-pyramid.

Structure:-

(i) Base of pyramid- repreasents producers or first tropic level.

(ii) Apex of pyramid- represents top level consumer or last- tropic level.




Pyramid of energy

Q.09. Name any two Bio-fertilizers.

ANSWER:

Rhizobium

Azospirillum

Q.10: What is red data book?

ANSWER

Red data book is a compilation of data on species threatened with extinction and is maintained by IUCN.

Uses:

1. Provides Information and develops awareness about the importance of threatened species
2. Identification & documentation of endangerd species & so measure can be taken for their protection.

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Section C:-

Q.11: Differentiate between Apomixes and Parthenogenesis.

ANSWER

| | Apomixis | | Parthenogenesis |
|---|---|---|---|
| (1) | Type of asexual reproduction where the embryo develops from the seeds without the process of fertilisation | (1) | Type of apomixis where the egg cells help in the development of an embryo |
| (2) | it produces a genetically identical clone of the parent cell. | (2) | Embryos develop from an unferrilised egg, & the offspring are genetically identical |
| (3) | Types: Recurrent apomixis non- recurrent, adventitious & vegetative apomixis | (3) | Types: Natural & artificial parthenogenesis |

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Q:12: Write a brief account on incomplete dominance.

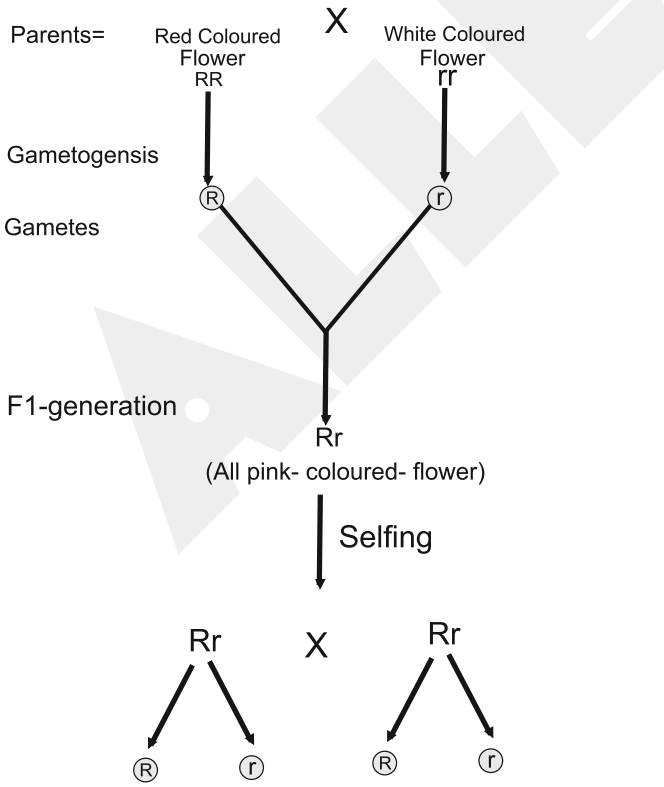
ANSWER

Discovered by- Carl Correns in flower colour of antirrhinum majus (snapdragon), Mirabilis Jalapa.

It is exception to law of dominance.

It is a phenomenon in which the $f_1$-hybrid exhibits characters intermediate of the parental gene.

Here, the phenotypic ratio deviates from the Mendels monohybrid ratio eg, Flower colour of Mirabilis Jalapa




Punnet Square

Phenotypic Ratio=1:2:1
Genotypic Ratio=1:2:1
P.R=G.R

Q.13 Distinguish between DNA and RNA.

ANSWER

| | DNA | | RNA |
|---|---|---|---|
| (1) | The sugar present is deoxyribose | (1) | The sugar present is Ribose |
| (2) | Nitrogen base present are adenine, Guanine, Thymine and Cytosine | (2) | Nitrogenous bases present are adenine, Guanine, Cytosine & uracil |
| (3) | It is usually double stranded & may be single stranded. | (3) | It is usually single stranded & may be double- stranded in some viruses |
| (4) | It is genetic material of almost all living organisms | (4) | It is the genetic material of only some- viruses |
| (5) | It is chemically less reactive and structurally more stable | (5) | It is chemically more reactive and structurally less stable. |

Q.14: What are Bt. Crops? List any two.

ANSWER

Bt crops are transgenic crops that produce the same- toxins as the bacterium Bacillus thuringiensis (Bt) in the plant cell. The bacterium Secretes spelific proteins known as " Cry proteins" that are toxic to insects

eg, Cotton, Corn, Brinjal.

Q.15: What are somatic hybrids? Give an example.

ANSWER:

A hybrid Produced by fusion of somatic cells of two different varieties or speies or even genera of plants each having a desirable character these hybrids are called somatic hybrids The process is called somatic hybridisation

eg, (1) Pomato = Somatic hybris between Tomato & Potato

(2) Bromato = Somatic hybris between Potato & Tomato

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SECTION D

Q. 16 Define hotspots of biodiversity. Name hotspots found in Indian sub-continent.

ANSWER:

Norman Myers developed the hot spot concept in 1988.

This is a mega diversity zone where large number of species are found.

It is an area of richest & most threatened reserviors of plant & animal life on earth

Initially 25- biodiversity hot spots were identified in world, now number of biodiversity Hot spot in world are 34 out of these 3- hotspots are found in india like

(1) Western Ghats & sri lanka.

(2) Indo- Burma

(3) Himalayas

Key criteria for determining a hot spot are:

(1) High level of species richness.

(2) High degree of endemism(that is species confined to that region & not found anywhere else)

(3) High degree of threat which is measured in terms of habitat loss, it means hot spot are region of accelerated habitat loss.

All the biodiversity hotspot put together cover less than 2% (1.4%) of earth land area, the number of species they collectively harbour is extremely high and strict protection of these hot spots could reduce the onging mass extinctions by almost 30%

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OR

Q: Define Ecological pyramid. Explain different types of Pyramids.

ANSWER:

It is the graphical representation of ecological parameters at different trophic level in an ecosystem is called pyramids

These parameters are number, biomass & energy

Ecological pyramids was given by Charles Eltom hence also called Eltonian Pyramids.

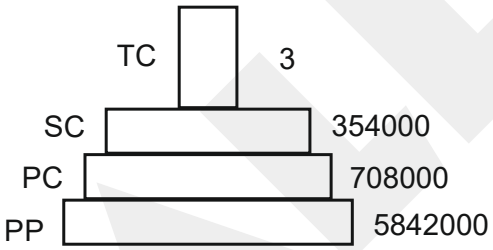
In pyramids Basal, mid & top tiers show the parameter values for producer, herbivores & cornivores in Ecosysytem

These pyramids are of 3-types

(1) Pyramids of Number:-

It is the graphical representation of number of individual organism in various tropic levels.

These pyramids are mostly- upright eg, grassland ecosystem and aquatic ecosystem.

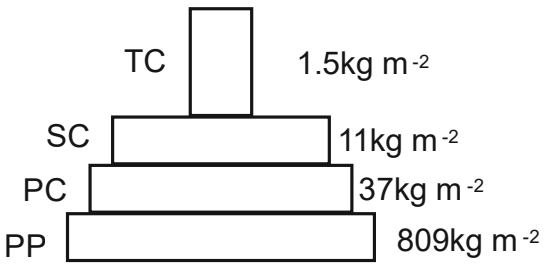



(2) Pyramid of Biomass:-

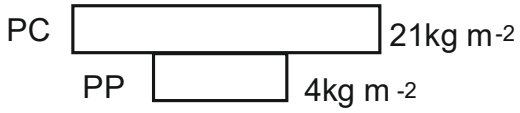
It is the graphical representation of total biomass of each tropic level of an ecosystem.

These Pyramids are mostly upright. Eg tree ecosystem, orest ecosystem.

But pyramid of biomass in aqurtic ecosystem is inverted because in it producers are micro-organisms & their biomass is very less.




upright-pyramid




Inverted pyramid

(3) Pyramid of energy:-

It is the graphical representation of amount of energy at each tropic level. It is always upright can never be inverted because when energy flowes from a particular tropic level to the next tropic level. some energy is always lost as heat at each tropic level.