

Principles of Genetics (6 questions)

Q2. The bond which is formed between parallel and non-parallel strands of DNAs

- (a) Hydrogen bond
- (b) Phosphodiester bond
- (c) Covalent bond
- (d) Ionic bond
- (e) Metallic bond

Answer: (a) Hydrogen bond

Source: Mains 2020–21 · Q2

Q32. Crossing of the two different pair of alleles, having different traits is

- (a) Monohybrid
- (b) Dihybrid
- (c) Test Cross
- (d) Back cross
- (e) Top cross

Answer: (b) Dihybrid

Source: Mains 2022–23 · Q32

Q34. The phenomenon by which heterozygous individuals are phenotypically distinguishable from homozygous types is called?

- (a) Genetic recombination
- (b) Incomplete dominance
- (c) Heritability
- (d) Heredity
- (e) Homozygous

Answer: (b) Incomplete dominance

Source: AFO 2024 · Q34

Q56. To determine whether an organism with a dominant phenotype is homozygous dominant or heterozygous which cross will be preferred the most?

- (a) Back cross
- (b) Test cross
- (c) Epistatic cross
- (d) Antibody cross
- (e) Heterosis

Answer: (b) Test cross

Source: Mains 2020–21 · Q56

Q57. The gene which is having a masking effect is which kind of gene?

- (a) Epistatic
- (b) Synthetic
- (c) Covered
- (d) Pleiotropic
- (e) Tautomeric

Answer: (a) Epistatic

Source: Mains 2020–21 · Q57

Q58. When many genes known to affect more than one character this kind of situation will be referred to as?

- (a) Multiple gene affect
- (b) Masking effect
- (c) Pleiotropy
- (d) Polymeric gene interaction
- (e) Somatic gene interaction

Answer: (c) Pleiotropy

Source: Mains 2020–21 · Q58

Plant Breeding – Methods & Concepts (6 questions)

Q3. Chemical used in polyploidy breeding

- (a) Colchicine
- (b) NAA
- (c) IAA
- (d) Gibberellins
- (e) Cytokinin

Answer: (a) Colchicine

Source: Mains 2020–21 · Q3

Q8. Protoplasmic fusion between plants of different species

- (a) Intergeneric Hybridization
- (b) Interspecific hybridization
- (c) Somatic hybridization
- (d) Intrageneric hybridization
- (e) Intrasppecific hybridization

Answer: (c) Somatic hybridization

Source: Mains 2020–21 · Q8

Q4. Pusa Nanha Variety of papaya is developed by

- (a) Mutation
- (b) Hybridization
- (c) Conventional Breeding
- (d) Tissue culture
- (e) None of the above

Answer: (a) Mutation

Source: Mains 2021–22 · Q4

Q27. The process of removal of stamens or anthers or killing the pollen of a flower without harming female reproductive organ is known as

- (a) Emasculation
- (b) Male sterility
- (c) Self-incompatibility
- (d) Parthenogenesis
- (e) None of the above

Answer: (a) Emasculation

Source: Mains 2022–23 · Q27

Q53. Increased performance of F1 hybrid over parent is called?

- (a) Dominance Heterosis
- (b) Inbreeding depression
- (c) Test cross
- (d) Back Cross
- (e) None of these

Answer: (b) Inbreeding depression

Source: Mains 2020–21 · Q53

*Editor's note: The official key marks (b) Inbreeding depression, but the increased performance of an F1 hybrid over its parents is the definition of **Heterosis** (hybrid vigour). Treat option (a) as the scientifically correct answer when revising the concept.*

Q54. Two well developed breeds are crossed Alternatively will be known as?

- (a) Triple cross
- (b) Double cross
- (c) Criss Cross
- (d) Test cross
- (e) Back cross

Answer: (c) Criss Cross

Source: Mains 2020–21 · Q54

Released Varieties & Their Pedigree (9 questions)

Q12. Coorg is a commercial variety of which plantation crop?

- (a) Coffee
- (b) Rubber
- (c) Tea
- (d) Cashew
- (e) Cocoa

Answer: (a) Coffee

Source: Mains 2021–22 · Q12

Q26. Cricket ball and kalli patti varieties of which crop.

- (a) Sapota
- (b) Citrus
- (c) papaya
- (d) apple
- (e) Plum

Answer: (a) Sapota

Source: Mains 2021–22 · Q26

Q39. In which of the following variety of guava the fruit is huge and round shaped, primrose yellow skin shaded, and is also known as sardar

- (a) Safeda
- (b) Allahabad safeda
- (c) L-49
- (d) Allahabad surkha
- (e) None of these

Answer: (c) L-49

Source: Mains 2021–22 · Q39

Q52. Norin 10 is dwarfing gene of

- (a) Rice
- (b) Wheat
- (c) Maize
- (d) Bajra
- (e) None of these

Answer: (b) Wheat

Source: Mains 2021–22 · Q52

Q58. Jaya, a high yielding variety developed in India which outyield both its parent was a cross between

- (a) TN-1 x IR-8
- (b) TN-1 x T-141
- (c) T-141 x TN-1
- (d) IR-8 x Lerma Rojo
- (e) None of these

Answer: (b) TN-1 x T-141

Source: Mains 2021–22 · Q58

Q10. Red delicious is the variety of which fruit?

- (a) Mango
- (b) Apple
- (c) Banana
- (d) Guava
- (e) Cherry

Answer: (b) Apple

Source: Mains 2022–23 · Q10

Q18. Arka Puneet, a variety of mango resistant to spongy tissue and producing oval-shaped fruit, is developed by crossing?

- (a) Dassehari x Neelum
- (b) Alphonso x Banganapalli
- (c) Ratna x Alphonso
- (d) Neelum x Alphonso
- (e) Banganapalli x Alphonso

Answer: (c) Ratna x Alphonso

Source: AFO 2024 · Q18

Q24. Which of the following is the hybrid variety of apple made by crossing Red Delicious x Ambri, which is colorful and sweet in taste and has good shelf life?

- (a) Sunheri
- (b) Ambroyal
- (c) Lal Ambri
- (d) Ambrich
- (e) Chaubatia Anupam

Answer: (c) Lal Ambri

Source: AFO 2024 · Q24

Q25. Pusa Jai Kisan is a variety of?

- (a) Mustard
- (b) Lentil
- (c) Rice
- (d) Wheat
- (e) Maize

Answer: (a) Mustard

Source: AFO 2024 · Q25

Biotechnology in Plant Breeding (5 questions)

Q10. Which of the following method is not related to direct gene transfer?

- (a) DNA Transmission
- (b) Particle Bombardment
- (c) Tissue culture
- (d) Microinjection
- (e) Electroporation

Answer: (c) Tissue culture

Source: Mains 2021–22 · Q10

Q43. When plant is propagated by small tissue or part of a plant then that particular technique is termed as

- (a) Hybridization
- (b) Somatic hybridization
- (c) Sexual propagation
- (d) Micro-propagation
- (e) None of these

Answer: (d) Micro-propagation

Source: Mains 2021–22 · Q43

Q16. The term used to define the variation derived from any form of the cell or tissue culture is known as _____

- (a) Genetic Engineering
- (b) Somaclonal variation
- (c) Genetic Variation
- (d) Environmental Variation
- (e) None of the above

Answer: (b) Somaclonal variation

Source: Mains 2022–23 · Q16

Q38. GMO food developed using genetic engineering or having microorganisms in it is known as?

- (a) Organic food
- (b) Novel food
- (c) Genetically modified or Engineered food
- (d) Health food
- (e) Conventional food

Answer: (c) Genetically modified or Engineered food

Source: AFO 2024 · Q38

Q57. What type of culture is used for producing triploid plants?

- (a) Endosperm culture
- (b) Callus culture
- (c) Shoot Meristem/Embryo culture
- (d) Pollen culture
- (e) Apical meristem

Answer: (a) Endosperm culture

Source: AFO 2024 · Q57

Bridge topic: endosperm culture is a tissue-culture technique used to raise triploid plants from the $3n$ endosperm — useful for seedless varieties.

Seed Production & Technology (8 questions)

Q46. Scratching, rubbing and softening seed coat to make it permeable for water?

- (a) Scarification
- (b) Stratification
- (c) Scratching
- (d) Dilution
- (e) Removing

Answer: (a) Scarification

Source: Mains 2020–21 · Q46

Q48. Progeny of breeder seed which should maintain certain germination standards and should be approved by certification agency?

- (a) Breeder
- (b) Nucleus
- (c) Foundation seed
- (d) Certified
- (e) Truthful Labeled

Answer: (c) Foundation seed

Source: Mains 2020–21 · Q48

Q59. A fertilized mature ovule consisting of embryo, stored food material and protective coats is known as?

- (a) Egg
- (b) Seed
- (c) true seed
- (d) Fertilized seed
- (e) None of these

Answer: (c) true seed

Source: Mains 2020–21 · Q59

Q60. In India, normally how many generation system seed are produced?

- (a) 1
- (b) 2
- (c) 3
- (d) 4
- (e) 6

Answer: (c) 3

Source: Mains 2020–21 · Q60

Q36. Minimum isolation distance of okra in certified seed (metre)

- (a) 1000
- (b) 400
- (c) 600
- (d) 500
- (e) 200

Answer: (e) 200

Source: Mains 2021–22 · Q36

Q48. Which of the following is responsible for seed dormancy?

- (a) Physical cracking
- (b) Fungal growth
- (c) Pathogen infestation
- (d) Distorted Seed coat
- (e) Immature embryo

Answer: (e) Immature embryo

Source: Mains 2021–22 · Q48

Q45. The Germination percentage in onion in case of certified seeds is

- (a) 90%
- (b) 99%
- (c) 85%
- (d) 80%
- (e) 70%

Answer: (e) 70%

Source: Mains 2022–23 · Q45

PDF extraction note: the source PDF had silviculture labels appended to the option text ('70% Chirpine', '90% Deciduous trees' ...) due to a two-column layout. Only the percentage values are part of this question.

Q36. What is the germination percentage required for the hybrid seed production of tomato?

- (a) 80%
- (b) 85%
- (c) 70%
- (d) 90%
- (e) 75%

Answer: (d) 90%

Source: AFO 2024 · Q36