

UPSC Mains 2025 Aug 31, 2025 Agriculture (Paper 2) Question Paper and Answer Key PDF

Q. No.	Question	Check Solution
Q1 (A)	Define cell cycle. Describe different types and phases of cell cycle.	<a href="#">Check Solution</a>
Q1 (B)	Briefly discuss significant features of heterosis and explain the dominance and overdominance hypotheses of heterosis, giving their main features.	<a href="#">Check Solution</a>
Q1 (C)	Define Marker-Assisted Selection and give suitable examples. Discuss the applications of marker-assisted selection in recurrent selection, gene pyramiding and QTL introgression.	<a href="#">Check Solution</a>
Q1 (D)	Define 'Grow-out test'. Explain briefly the methods of roguing in seed fields.	<a href="#">Check Solution</a>
Q1 (E)	Classify plant mineral nutrients based on biochemical functions. How do excess minerals in the soil limit the plant growth?	<a href="#">Check Solution</a>
Q2 (A)	Explain mutagenesis with its classification. Discuss briefly the mechanisms of action of alkylating agents and azide mutagens in crop improvement.	<a href="#">Check Solution</a>
Q2 (B)	Give an account on double haploid and its applications in plant breeding. Also discuss the production methods of haploid.	<a href="#">Check Solution</a>
Q2 (C)	What do you mean by Intellectual Property ? Discuss the protection of Intellectual Property Rights in reference to patent, plant breeders' rights and copyright.	<a href="#">Check Solution</a>
Q3 (A)	Why do fruit plants need to be propagated vegetatively? Explain the advantages and disadvantages of asexual and sexual propagation.	<a href="#">Check Solution</a>
Q3 (B)	Define genetic purity. How can the maintenance of genetic purity of varieties be done outside their normal cultivation area?	<a href="#">Check Solution</a>
Q3 (C)	Explain the functions of plant cell wall in growth, development, maintenance and reproduction of plants.	<a href="#">Check Solution</a>
Q4 (A)	What do you understand by water transport in xylem? Explain the Cohesion-Tension theory.	<a href="#">Check Solution</a>
Q4 (B)	How is the detailed record of relationship between the selected plants and their progenies maintained in the pedigree selection method ? Discuss the procedure for pedigree selection method, with the help of a simplified schematic diagram.	<a href="#">Check Solution</a>
Q4 (C)	Describe the Indian Seeds Act, 1966. Also discuss the essential activities required for the success of seed industry in India.	<a href="#">Check Solution</a>
Q5 (A)	How do plants absorb nitrogen from the environment ? Describe the mechanism of nitrate assimilation and synthesis of amino acids in plants.	<a href="#">Check Solution</a>
Q5 (B)	Explain the strategies to manage citrus decline in India.	<a href="#">Check Solution</a>
Q5 (C)	What do you understand by mango malformation? Elucidate symptoms, causal organism and control measures of floral mango malformation.	<a href="#">Check Solution</a>

Q5 (D)	What do you understand by food-based dietary approaches ? Explain briefly how they will help to eliminate hunger.	<a href="#">Check Solution</a>
Q5 (E)	What are the major constraints of food grain processing in India?	<a href="#">Check Solution</a>
Q6 (A)	Write the cultivation practices of grapes in respect of soil and climatic requirements, improved varieties, training and pruning, fruit thinning and plant protection.	<a href="#">Check Solution</a>
Q6 (B)	What are the trends of food productivity in India? Give your opinion for sustainable food production system which can address food and nutritional security of India.	<a href="#">Check Solution</a>
Q6 (C)	How does salinity affect the growth and photosynthesis in plants? Elucidate the avoidance mechanisms of salt stress by plants.	<a href="#">Check Solution</a>
Q7 (A)	Discuss the production technologies of peas in relation to varieties, climate requirement, sowing time, seed rate and plant protection.	<a href="#">Check Solution</a>
Q7 (B)	Differentiate plant growth and development. Explain the different phases of growth in plants and also discuss the various methods of growth measurement and growth analysis.	<a href="#">Check Solution</a>
Q7 (C)	Elaborate the major constraints of food and nutritional security in India.	<a href="#">Check Solution</a>
Q8 (A)	What do you mean by new generation plant growth regulators? Enlist the different new generation plant growth regulators and also discuss their role in mitigating abiotic stresses.	<a href="#">Check Solution</a>
Q8 (B)	Elaborate the micronutrient deficiency in human beings. Comment on various strategies in combating protein-energy malnutrition with special reference to women and children.	<a href="#">Check Solution</a>
Q8 (C)	Give an account on mycoplasmal diseases and physiological disorders of Potato.	<a href="#">Check Solution</a>