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Term End Examination 2025-2026**Programme – B.Sc.(BT)-Hons-2024/B.Sc.(BT)-Hons-2025****Course Name – Indian Agriculture****Course Code - BBT10201****(Semester I)****Full Marks : 60****Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. *Choose the correct alternative from the following :*

- (i) Use the teachings from Kautilya's Arthashastra to develop a strategy for forest management in an ancient Indian kingdom.
- | | |
|---|--|
| a) Prioritize hunting over forestry. | b) Focus on collecting forest produce and preserving wildlife. |
| c) Ignore forestry and focus solely on agriculture. | d) Promote deforestation for urban development. |
- (ii) Which type of sexual reproduction occurs in higher plants where the gametes are morphologically different?
- | | |
|--------------------|---------------|
| a) Isogamy | b) Heterogamy |
| c) Parthenogenesis | d) Apogamy |
- (iii) Cross-pollination depends on external agents for pollen transfer. Which of the following is an example of an agent for cross-pollination?
- | | |
|------------------|---------------|
| a) Zoophilous | b) Autogamous |
| c) Geitonogamous | d) Haploid |
- (iv) Classify which objective–trait mapping is correctly matched per the text.
- | | |
|---|---|
| a) Improved quality → drought tolerance in rice | b) Abiotic resistance → resistance to salinity/heat/frost |
| c) Earliness → increased pesticide requirement | d) Biotic resistance → lodging resistance only |
- (v) Interpret the undesirable effects of plant breeding on crop genetic diversity.
- | | |
|--|---|
| a) Modern varieties are more diverse than traditional landraces | b) Plant breeding increases the adaptability of plants to environmental changes |
| c) Plant breeding often reduces genetic diversity, making crops more uniform | d) Genetic diversity remains unchanged despite plant breeding |
- (vi) Describe the scope of farm management.

- a) It is focused on large-scale agricultural industries. b) It deals with the management of public agricultural resources.
- c) It focuses on the efficient allocation of resources at the level of individual farms. d) It is concerned solely with crop production.
- (vii) Name the main tools used for harvesting millet according to ancient texts.
- a) Sickles and swords b) Plough and sickle
- c) Reaping hook and plough d) Machete and plough
- (viii) Predict the period during which chili peppers were introduced to India.
- a) Before 1000 AD b) During the medieval period
- c) After the 16th century by the Portuguese d) During the Vedic period
- (ix) Choose the most effective plant protection method used in ancient India against soil-borne diseases.
- a) Watering trees with cold water b) Applying milk sprays
- c) Using neem oil extracts d) Plastering wounds with turmeric
- (x) Define the function of bile salts in plant protection when using cow dung.
- a) They act as insect attractants. b) They have antiseptic properties.
- c) They increase plant water absorption. d) They act as a soil binder.
- (xi) Match the crop with its country of origin.
- a) Potato - Africa b) Rice - South America
- c) Wheat - Fertile Crescent d) Maize - India
- (xii) Identify which crop was introduced to India by the Portuguese.
- a) Mango b) Wheat
- c) Chili pepper d) Barley
- (xiii) Determine the importance of farm planning.
- a) It helps farmers manage crops but ignores livestock management b) It ensures an organized approach to resource allocation and profitability
- c) It only applies to small-scale farms d) It reduces the importance of technological innovations
- (xiv) Determine why farm planning includes soil conservation practices.
- a) To increase labor costs b) To ensure the long-term sustainability of farmland
- c) To reduce the use of fertilizers d) To increase immediate profits only
- (xv) Recall the types of apomixis as
- a) Amphimixis, Parthenogenesis, Apospory b) Parthenogenesis, Apogamy, Apospory
- c) Syngamy, Apogamy, Amphimixis d) Parthenocarp, Apogamy, Amphimixis

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Discuss about the civilization associated with early cotton cultivation in India? (3)
3. Mention the disadvantage of cross-pollination in plants. (3)
4. Define the term "apomixis" in relation to plant reproduction. (3)
5. Compute the effectiveness of partial budgeting and complete budgeting in decision-making for small and large-scale changes on a farm. (3)
6. Elaborate about the origin and evolution of Rice plants. (3)

OR

Justify the role of plants and trees during Indus valley Civilization. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Predict the role of genetic engineering in modern plant breeding and how the application of biotechnology might address future challenges in crop production. (5)
8. Explain how different vectors type functions in the context of cloning DNA fragments. (5)
9. Identify the main crops grown during the Mauryan period and explain how the irrigation systems and agricultural techniques of the time helped increase productivity. (5)
10. Explain the significance of the term "artha" in the context of ancient Indian economic practices. How did the varna system, particularly the role of the vaishyas, contribute to national wealth and economic stability? (5)
11. Describe the materials and practices that were used to protect crops from pests and diseases in the ancient period. List the ancient methods used for plant protection mentioned in Surapala's Vrikshayurveda. (5)
12. Assess the role of farm budgeting in effective farm management. Differentiate between partial and complete budgeting, and explain how each method assists farmers in making decisions to improve profitability. (5)

OR

Adapt the principles of product substitution and equi-marginal returns to a real-world farming scenario. How can these principles guide farmers in selecting the right combination of enterprises and efficiently allocating scarce resources? (5)

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