[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1534 A

Unique Paper Code : 42167901

Name of the Paper : Economic Botany and Biotechnology

Name of the Course : **Life Science**

Semester : VI

Duration : 3:30 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Section A** and **B** on SEPARATE SHEETS.
3. Question No. **1** of both sections is COMPULSORY.
4. Attempt **three** questions from Section A and **three** questions from Section B including question number **1** of both sections.
5. Attempt all parts of the question together.

P.T.O.

SECTION A

1. (a) Fill in the blanks **(any five)** : (5×1=5)

(i) Gene centre concept of cultivated plants was given by _____ .

(ii) Cloves are dried, highly aromatic, and unexpanded _____ .

(iii) _____ plant is called as poor man's meat.

(iv) Botanical name of New world cotton is _____ .

(v) _____legume plant is a rich source of oil.

(vi) The state with highest production of tea is _____ .

(b) Match the following : (5×0.5=2.5)

(i) Theine	(a) groundnut
(ii) Soybean	(b) cotton
(iii) King of spices	(c) rich source of protein
(iv) Cash crop of India	(d) black pepper
(v) Gynophore	(e) tea

2. Draw well-labeled diagrams of **any three** of the following : (3×5=15)

(i) L.S. of caryopsis of Triticum aestivum

(ii) V.S. of tea leaf

(iii) L.S. of floral bud of Eugenia caryophyllus

(iv) C.S. of peppercorn

3. Write short notes on **any three** of the following : (3×5=15)

(i) Green revolution

(ii) Economic importance of legumes

(iii) Uses of spices

(iv) Processing of cotton

4. (a) Give a detailed account of the origin, morphology, processing, and uses of wheat. (10)

(b) Expand **any five** of the following : (5)

(i) CIMAP

(ii) CSIR

(iii) ICGEB

(iv) FRI

P.T.O.

(v) IRRI

(vi) NBR1

5. (a) Write about the centre of origin of crop plants. Discuss in relation to Vavilov's Concept. (7.5)

(b) Explain the processing and uses of tea. (7.5)

SECTION B

1. (a) Define **any five** of the following : (5×1=5)

(i) Micropropagation

(ii) Monoclonal antibodies

(iii) Microprojectile bombardment

(iv) Somaclonal variation

(v) Chimeric plants

(vi) T-DNA

(b) Fill in any five of the blanks : (5×0.5=2.5)

(i) The technique of DNA fingerprinting was devised by _____ .

(ii) Crown gall disease in plants is caused by _____ .

(iii) _____ technique is used in forensics to identify criminals and also for solving paternity disputes.

(iv) Flaploid plants can be produced by _____ culture.

(v) Incorporation of _____ causes the pre-mature termination of polynucleotide chain in DNA sequencing reaction.

(vi) _____ genes of Ti plasmid are responsible for T-DNA transfer into plants.

2. (a) Differentiate between the following **(any three)** : (3×4=12)

(i) PCR and RT-PCR

(ii) Northern and western blotting

(iii) RAPD and SNP

(iv) Direct and indirect gene transfer techniques

(b) Match the following : (6×0.5=3)

(i) Southern blotting	(a) Kary Mullis
(ii) Endosperm culture	(b) Western blotting
(iii) PVDF membrane	(c) Genomic DNA

P.T.O.

(iv) Androgenesis	(d) Agrobacterium tumefaciens
(v) PCR	(e) Guha & Maheshwari
(vi) T-DNA	(f) Triploids

3. (i) Describe in detail Sanger's method of DNA sequencing and its advancement in recent times. (8)

(ii) Describe the process of endosperm culture. Mention the applications of the technique. (7)

4. (i) Illustrate the process of Agrobacterium-mediated gene transfer in plants and its role in the production of golden rice. (8)

(ii) Explain the process of ELISA. Mention few advantages of the technique in medical diagnostics. (7)

5. (i) Explain the methodology of androgenesis with suitable diagrams. How is the technique beneficial in crop improvement? (8)

(ii) Describe the technique of RFLP. Mention its important applications. (7)