[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1372 C

Unique Paper Code : 32161301

Name of the Paper : Anatomy of Angiosperms

Name of the Course : **B.Sc. (Hons.) Botany**

Semester : III

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.

2. **Question no. 1** is compulsory, attempt **five** questions in all.

3. Draw well labelled diagrams wherever required and answer all parts of question

P.T.O.

1. (a) Define the following **(Any five)** (5×1=5)

(i) Casparian strips

(ii) Bulliform cells

(iii) Exodermis

(iv) Plasmodesmata

(v) Dendrochronology

(vi) Callose

(b) Match the following: (5×1=5)

(1) Commercial cork	(a) *Trochodendron*
(2) Raphides	(b) *Quercus suber*
(3) Lateral root	(c) *Helianthus stem*
(4) Endarch xylem	(d) *Pericycle*
(5) Veselless angiosperm	(e) *Calcium oxalate*

(c) Give suitable examples where following are present

(Any five) (5×1=5)

(i) Brachysclereids

(ii) Amphicribal vascular bundle

(iii) Angular collenchyma

(iv) Druses

(v) Lysigenous cavity

(vi) Anisocytic stomata

2. Write short notes on: **(Any three)** (5×3=15)

(i) Applications of Plant Anatomy in Forensic science

(ii) Kranz Anatomy

(iii) Reaction wood

(iv) Phloem as a dynamic tissue

3. Differentiate between: **(Any five)** (3×5=15)

(i) Heart wood and sap wood

(ii) Vessels and tracheids

(iii) Collenchyma and parenchyma

(iv) Articulated and non-articulated laticifers

(v) Cutinization and cuticularization

(vi) Paratracheal and apotracheal parenchyma

4. Draw well labelled diagrams of (Any three): (5×3=15)

(i) T.S. Periderm showing lenticels

(ii) T.S of Dicot stem

(iii) V.S of *Nerium leaf*

(iv) L.S. Xylem Vessels showing tyloses

5. (a) Early and late wood are formed as a result of seasonal activity of the cambium. Justify the statement with the help of well labelled diagrams. (8)

(b) Included phloem is the outcome of anomalous secondary growth. Elaborate the statement citing suitable example with the help of well labelled diagram. (7)

6. (a) Classify stomata according to Metcalfe and Chalk along with well labelled diagrams and examples. (8)

(b) Explain briefly with the help of well labelled diagrams the process of secondary growth in dicot roots (7)

7. (a) Along with suitable examples, describe the anatomical adaptations shown in hydrophytes. (8)

(b) Explain the organization of root apex with the help of any three suitable theories. Illustrate with well labelled diagrams. (7)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1400 **C**

Unique Paper Code : 32161302

Name of the Paper : Economic Botany(LOCF)

Name of the Course : **B.Sc. (H) Botany**

Semester : III

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions.
3. **All** questions carry equal marks.
4. Question no. **1** is compulsory.

1. (a) Give the botanical names of **any five** of the following : (5×1=5)

   (i) The source of "Shahi Zafran"

   (ii) Leaf fibres used in making tea bags

   (iii) A major plant source used as a substitute of coffee

   (iv) Leaf used in making bidi

   (v) Plant roots used for making screens in coolers

   (vi) Source of broth used for microbial cultures

P.T.O.

(b) Define **any five** of the following terms :

(i) Retting

(ii) Ratooning

(iii) Iodine number

(iv) Lancing

(v) Caryopsis

(vi) Pharmacology (5×1=5)

(c) Expand and write the place where the institutes are located **(any five)** :

(i) ICRISAT

(ii) RRIM

(iii) IARI

(iv) SBI

(v) CIMAP

(vi) IRRI (5×1=5)

2. Differentiate between the following **(any three)** :

(i) Essential oils and Fatty Oils

(ii) Black Tea and Green Tea

(iii) Flue curing and Sun curing

(iv) White Jute and Tossa Jute

(v) Indica and Japonica Rice

(vi) Millets and Cereals (3×5=15)

3. Draw labelled diagrams of **any three** of the following. Write botanical name and family also. (3×5=15)

   (i) L.S. cotton seed

   (ii) L.S. Clove flower bud

   (iii) T.S. Hesperidium

   (iv) L.S. wheat grain

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

   (i) Products and By-products of sugarcane industry

   (ii) Extraction methods of fatty oils

   (iii) Importance of legumes

   (iv) Cannabis as multipurpose crop

   (v) Green Revolution

5. (a) What is tapping? Explain different types of tapping and processing of rubber. (1+6+2=9)

   (b) Write botanical name, family, part used and active constituents of **any three** of the following. (3×2=6)

   (i) Poppy

   (ii) Saffron

   (iii) Fever bark tree

   (iv) Tea

6. (a) Explain Vavilov's work on origin of cultivated plants. List all the centres of origin with examples. (2+8=10)

(b) Which state in India is the chief producer for the following (***any five***): (5×1=5)

(i) Black pepper

(ii) Cotton

(iii) Coconut

(iv) Groundnut

(v) Rubber

(vi) Wheat

7. (a) What is retting? Explain the process of retting taking jute as an example. Write economic importance of jute. (1+5+2=8)

(b) Match the following : (7×1=7)

(i) Golden tip	1. Mustard
(ii) Solanin	2. *Linum* usitatissimum
(iii) Multipurpose crop	3. Potato
(iv) Corymbose raceme	4. Tea
(v) Flax	5. *Glycine max*
(vi) Wonderbean	6. Clove
(vii) Eugenol	7. Coconut

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : **1418** **C**

Unique Paper Code : 32161303

Name of the Paper : Genetics

Name of the Course : **B.Sc. (Hons.) Botany**

Semester : III

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. All Questions carry equal marks.
3. Question No. **1** is compulsory.
4. Attempt five questions in all including **Question No. 1.**

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

   (i) Pseudodominance

   (ii) Frameshift mutation

P.T.O.

(iii) Trisomy

(iv) Epigenetics

(v) Dicentric chromosome

(vi) Transposon (1×5=5)

(b) Give one contribution of (any five) of the following

(i) Carl Correns

(ii) Barbara McClintock

(iii) Sutton and Boveri

(iv) R. C. Punnett

(v) Hugo de Vries

(vi) Alfred Strutevant (1×5=5)

(c) Fill in the blanks:

(i) Human females have _____ linkage groups.

(ii) Double monosomy is represented as _____.

(iii) Short legged breed of sheep was named as _____ by Seth Wright.

(iv) _____ is an example of sex- linked recessive trait.

(v) When a gene affects many aspects of phenotype, it is said to be _____.

(1×5=5)

2. Write short notes on **(any five)** of the following

(i) Photoreactivation repair

(ii) Base Analogs

(iii) Dominant Epistasis

(iv) *cis trans* complementation test

(v) Retrotransposons

(vi) Reciprocal translocation

(vii) Mitochondrial inheritance in Yeast (3×5=15)

3. Differentiate between **(any five):**

(i) Penetrance and Expressivity

(ii) Codominance and Incomplete Dominance

(iii) Test cross and Reciprocal cross

(iv) Paracentric and Pericentric inversion

(v) Allopatric and Sympatric speciation.

(vi) Down's syndrome and Klienefelter's syndrome

(3×5=15)

4. (a) In pea plant, Tall (T) is dominant over dwarf (t), Yellow seed (Y) is dominant over green (y) and Round seed (R) is dominant over wrinkled seed (r). A homozygous dwarf, green and wrinkled pea plant is crossed to a homozygous tall, yellow and round plant. Using forked line method give the genotypes and phenotypes of parents, F_1 and F_2 progenies. (8)

(b) Give an account of the inheritance of Kappa particles in *Paramecium* with diagrams. (7)

5. (a) In a population of 5000, cystic fibrosis is seen in 125 individuals. How many individuals in the population are the carrier of the gene for cystic fibrosis? (5)

(b) Mutations are caused by both environmental and chemical insults. Describe how chemical mutagens induce mutations. Give two examples of useful induced mutations in crop improvement. (10)

6. (a) An individual heterozygous at three gene loci *Aa*, *Nn*, *Rr* is crossed with the homozygous recessive parent aa nn rr . The frequency of progeny with different genotypes is as follows:

ANR	347
ANr	52
Anr	357
Anr	90
AnR	49
AnR	6
a NR	92
a Nr	7
Total progeny	1000

(i) Which classes represent the parental types? (2)

(ii) Which classes reflect the occurrence of single cross overs and double cross overs? (2)

(iii) Construct the genetic map of the 3 loci involved indicating both map distance and correct gene sequence. (5)

(iv) What is the coefficient of coincidence involved? Also find out the degree of interference. (3)

(b) What is Position effect? Explain with the help of a suitable example. (3)

7. (a) Explain the inheritance of skin color in humans (5)

(b) What do you understand by ABO blood group series? Explain its genetic basis of inheritance. (5)

(c) How can you distinguish between the terms haploidy and monoploidy? How can haploids be produced and utilized in plant breeding? (5)