

PGS-253009
Autonomous Examination DEC-2025
SEMESTER-III
M.Sc. BOTANY
Paper – I (Developmental Biology)

Time : 3 Hours

M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

01.Objective type questions Attempt any 10 questions out of 12 given below.

(10 x 01 = 10)

- (i) The Tunica corpus organization is characteristics of :
 - (a) Root apex
 - (b) Shoot apex
 - (c) Leaf base
 - (d) Pericycle
- (ii) ap1, ap2, ap3 mutants are related to :
 - (a) Embryo patterning
 - (b) Floral organ identify
 - (c) Seed germination
 - (d) Light signaling
- (iii) Which plants shows anamolous secondary growth :
 - (a) Sunflower
 - (b) Teak
 - (c) Beorhaavia
 - (d) Mango
- (iv) The hormone that breaks seed dormancy is :
 - (a) ABA
 - (b) GA₃
 - (c) IAA
 - (d) Ethylene
- (v) Wood is formed by the activity of :
 - (a) Cork cambium
 - (b) Vascular cambium
 - (c) Pericycle
 - (d) Epidermis
- (vi) Sunken stomata are characteristic of
- (vii)hormone promotes senescence
- (viii) Latecomers are cells that secretes.....
- (ix) The vascular bundle type in curcurbita stem is.....
- (x) Annual rings are formed due to
- (xi) Bulliform cells are, mainly found in xerophytic grasses.

(True/False)
- (xii) Lateral Heristems include vascular cambium and cork cambium.

(True/False)

(02)

Section-B

02.Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below. (3 x 3 = 09)

- (i) Where is RAM located ?
- (ii) Define senescence.
- (iii) Explain secondary Anomalous growth.
- (iv) Define leaf anatomy.
- (v) What is bud dormancy?

Section-C

03.Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below. Question for annotation is compulsory. (3 x 6 = 18)

- (i) Explain the Tumiea corpus theory of shoot apex.
- (ii) Describe the difference between sapwood and heartwood.
- (iii) Explain the internal structure of sub-merged hydrophytes plants.
- (iv) What is programmed cell death ? Describe types of cell death.
- (v) Write short note on :
 - (a) Secretary ducts and laticifers tissues.
 - (b) Seed dormancy.

Section-D

04.Long answer type questions (word limit – 500–600 words) Attempt any three questions out of five given below.

(3 x 11 = 33)

- (i) Describe the anatomy of a typical dicot stem and root with reference to vascular tissues.
- (ii) Describe the ABC model of floral development in Arabidopsis thaliana with example of Homestic mutants.
- (iii) Explain the role of cambium in wood formation and wood differentiation.
- (iv) Describe in detail the anatomical adaptations of xerophytes with examples.
- (v) Describe senescence in detail.

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PGS-253010
Autonomous Examination DEC-2025
SEMESTER-III
M.Sc. - (BOTANY)

Paper – II (Systematics Evolution and Taxonomy)

Time : 3 Hours

M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

01.Objective type questions Attempt any 10 questions out of 12 given below.

(10 x 01 = 10)

- (i) Who is considered as the father of taxonomy.
(a) Aristotle (b) Linnaeus
(c) Earnest Haeckel (d) Whittaker
- (ii) This system of classification was used by Banthem & Hooker.
(a) Phylogenetic system (b) Natural system
(c) Artificial system. (d) Asexual system
- (iii) The category of family is between which two taxonomic ranks ?
(a) Germs and species (b) Order & germs.
(c) Phylum and germs (d) Kingdom & Class
- (iv) Which of the following is considered the highest category in taxonomy?
(a) Phylum (b) Class
(c) Kindom (d) Species
- (v) A pendulous type of inflorescence.
(a) Catkin (b) Head
(c) Spike (d) Umbel
- (vi) Atropine is obtained from theplam.
- (vii) Gynoecia's of solnaceae is
- (viii) Largest dicot family is
- (ix) Placentation is swollen and axile in family.....
- (x) The national botanical research institute is located at.....
- (xi) Angiosperms are plams that produce flower. (True/False)
- (xii) Taxonomy uses structures to classify organisms. (True/False)

(02)

Section-B

02.Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below.

(3 x 3 = 09)

- (i) Write the merit demerit of Bentham and hooker classification ?
- (ii) What is taxonomic hierarchy ?
- (iii) Write any two botanical garden in India.
- (iv) Give the important character of family Rubiales.
- (v) What is phenetic ?

Section-C

03.Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below. Question for annotation is compulsory.

(3 x 6 = 18)

- (i) What is natural system of classification.
- (ii) What is hybridization.
- (iii) Describe the important herbaria of India.
- (iv) Write the floral characters of family lamiales.
- (v) Explain the relevance of taxonomy to conservation.

Section-D

Long answer type questions (word limit – 500–600 words) Attempt any three questions out of five given below.

(3 x 11 = 33)

- (i) Describe the phylogenetic system of classification.
- (ii) Explain the taxonomic evidence with cytology ?
- (iii) Explain the epigynae ?
- (iv) Describe the family myrtales ?
- (v) Describe the phenetic verses phylogenetic systems ?

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PGS-253011
Autonomous Examination DEC-2025
SEMESTER-III
M.Sc. (Botany)
Paper – III (Principles of Ecology)

Time : 3 Hours

M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

1. Objective type questions Attempt any 10 questions out of 12 given below. (01x 10= 10)

(i) The term *keystone species* refers to:

- a) A species that forms the base of the food chain
- b) A species that has a disproportionately large effect on its ecosystem
- c) A species found only in extreme environments
- d) A species recently introduced into a new habitat

(ii) Which of the following is not a density-dependent limiting factor?

- a) Disease
- b) Predation
- c) Drought
- d) Competition

(iii) The Red Data Book is published by:

- a) UNEP
- b) WWF
- c) IUCN
- d) FAO

(iv) The *law of tolerance* in ecology refers to:

- a) The ability of organisms to tolerate pollution
- b) The range of environmental conditions within which a species can survive
- c) The mutual tolerance between species in a community
- d) The degree of genetic variation in a population

(v) Which of the following ecosystems has the highest net primary productivity (NPP)?

(02)

- a) Desert
- b) Grassland
- c) Tropical rainforest
- d) Tundra

(vi) In the nitrogen cycle, the conversion of atmospheric nitrogen into ammonia by microorganisms is called:

- a) Denitrification
- b) Nitrification
- c) Nitrogen fixation
- d) Ammonification

(vii) Mangrove forests are found in:

- a) High mountain regions
- b) Wetlands and estuarine areas
- c) Deserts
- d) Temperate grasslands

(viii) Which of the following is *not* a component of ecosystem structure?

- a) Biotic components
- b) Abiotic components
- c) Energy flow
- d) Ecological succession

(ix) The process by which one community is gradually replaced by another in an ecosystem is called _____.

(x) Species found only in a particular geographic region are called _____ species.

(xi) Endemic species are found all over the world. (True/False)

(xii) The biosphere includes only living components of the Earth. (True/False)

Section -B

2. Very Short answer type questions (word limit – 70-100 words)

Attempt any three questions out of five given below.

(03 x 03=09)

- (i) What is Ecotype?
- (ii) Differentiate between in-situ and ex-situ conservation.
- (iii) What are ecological pyramids? Mention their types.
- (iv) Explain the importance of biodiversity hotspots.
- (v) What are keystone species? Give one example.

(03)

Section -C

3. Short answer type questions (word limit – 200-250 words) Attempt any three questions out of five given below. (06 x 03=18)

- (i) Explain the structure and energy flow in an ecosystem using a food web as an example.
- (ii) Describe the major factors influencing population growth and regulation in natural ecosystems
- (iii) Explain the concept of ecological niche and its importance in community organization.
- (iv) Define and explain the concept of biogeography. Discuss the major biogeographical regions of the world.
- (v) Discuss the major strategies and legal frameworks for biodiversity conservation in India.

Section -D

4. Long answer type questions (word limit – 500-600 words) Attempt any three questions out of five given below. (11 x 03=33)

- (i) Describe in detail the structure and function of ecosystems.
- (ii) Explain the concept of ecosystem productivity and factors affecting it.
- (iii) Discuss the causes, consequences, and global patterns of biodiversity loss.
- (iv) Discuss the major biogeochemical cycles and their ecological significance.
- (v) Explain the process and types of ecological succession.

PGS-253012
Autonomous Examination DEC-2025
SEMESTER-III
M.Sc. - BOTANY

Paper – V (Pathogen and Pests of Crop Plants)

Time : 3 Hours

M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

Objective type questions Attempt any 10 questions out of 12 given below.

(1 x 10 = 10)

- (i) The Virulence of pathogens refers to
 - a) Its ability to survive in the environment
 - b) Its ability to cause disease severity in the host
 - c) Its nutritional requirements
 - d) None of the above
- (ii) Penetration of pathogen into host tissue can occur through
 - a) Stomata only
 - b) Natural openings, wounds and direct enzymatic degradation
 - c) Root hairs only
 - d) the vascular system only
- (iii) The disease “blast of rice” is caused by
 - a) *Pyricularia oryzae* b) *Puccinia graminis*
 - c) *Rhizoctoniasolani* d) *Synchytriumendobioticum*
- (iv) Phyllosphere of plant refers to
 - a) Change in crop variety
 - b) Aerial surface of leaves and stems inhabited by microbes
 - c) Interior of plant tissue
 - d) Microbes living on seeds
- (v) The primary inoculum refers to
 - a) Initial source of pathogen causing first infection in a season
 - b) Air born spores only
 - c) Pathogen resting structure

d) secondary infection spread within a crop season

(02)

- (vi) The process by which bacteria exchange genetic material through direct contact is called
- (vii) The visible expression of plant disease is known as
- (viii) Wart disease of potato is caused by
- (ix) One example of well-known agent of biological control of plant disease is.....
- (x) Phytoalexins are
- (xi) Late blight of Potato and Blast of rice are examples of viral diseases **(True/False)**
- (xii) Vein clearing disease of Bhindi is caused by Virus **(True/False)**

Section-B

Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below.

(3 x 3 = 09)

- (i) Write briefly on general characteristics of Bacteria.
- (ii) Differentiate between pathogenic and non-pathogenic causes of plant disease
- (iii) Write general symptoms of plant diseases.
- (iv) What is the significance of rhizosphere studies in plant pathology?
- (v) Write briefly on the defense of plant against pathogens

Section-C

Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below. Question for annotation is compulsory.

(6 x 3 = 18)

(03)

- (i) Write short notes on disease caused by viruses and their mode of transmission.
- (ii) Explain the Biochemical and structural aspects of the host-parasite relationship.
- (iii) Describe the process of resistance and susceptibility.
- (iv) What are phytoalexins, and how they function in plant defense?
- (v) Write short note on role of enzyme in pathogenesis of plant disease

Section-D

Long answer type questions (word limit – 500.600 words) Attempt any three questions out of five given below.

(11 3 = 33)

- (i) Explain the heterotrophic mode of nutrition in viruses with emphasis on parasitism.
- (ii) Discuss the recurrence of plant diseases with special reference to rust disease of wheat in India
- (iii) Describe various modes of pathogens penetration and entry into host plant.
- (iv) Discuss Koch's postulates and also explain how they are used to prove pathogenicity of an organism.
- (v) Explain the principle of epidemiology and disease forecasting in plant pathology