5. Describe the classification, causes, and application of polyembryony. 12

Or

Write short notes on : 6 × 2

(*i*) Nutrition of embryo

(*ii*) Structure and function of suspensor.

5th Semester Examination, 2021

Time : 3 hours

Full Marks : 60

Answer any **one** Group as per your Syllabus

Answer from **all** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

GROUP – A

(MODEL SYLLABUS)

(REPRODUCTIVE BIOLOGY OF ANGIOSPERMS)

SECTION – A

1. Answer *all* questions : 1 × 8

(*a*) Intine of Pollengrain is composed of _____ .

(*b*) Generally how many megaspore take part in the development of female gametophyte ?

(*c*) Angiosperm ovules are generally _____.

(*d*) Where do the ovules grow ?

(*e*) The two nuclei at the end of the pollen tube are called _____.

(*f*) A mass of nutritive material outside the embryosac is called _____.

(*g*) The primary endosperm nucleus is _____.

(*h*) During the germination of seeds , the seed coat ruptures due to _____.

SECTION – B

2. Answer any *eight* questions of the following within *two* to *three* sentences each : $1\frac{1}{2} \times 8$

(*a*) Callose.

(*b*) Define MGU.

(*c*) What is Caruncle ?

(*d*) Define embryo sac.

(*e*) Masulae.

(*f*) Define double fertilization.

(*g*) What is self incompatibility ?

(*h*) What is suspensor ?

(*i*) What is apomixis ?

(*j*) Define seed.

SECTION – C

3. Answer any *eight* questions of the following within *75* words : 2×8

(*a*) Pollinia.

(*b*) NPC system.

(*c*) Bisporic embryosac.

(*d*) Structure of endothelium.

(*e*) Pollen viability.

(*f*) *In vitro* pollination.

(*g*) Path of pollen tube in pistil.

(*h*) Nutrition of embryo.

(*i*) Seed dispersal mechanism.

(*j*) Endosperm.

SECTION – D

Answer **all** questions of the following within **500** words : 6×4

4. Describe the process of microgameto-genesis in plants.

Or

Write short notes on :

(*i*) Pseudomonads

(*ii*) Structure and function of Anther.

5. Describe the structure and function of Embryo sac.

Or

Write short notes on :

(*i*) Tetrasporic embryo sac

(*ii*) Mega gametogenesis.

6. What is self incompatibility ? Discuss the concept and methods to overcome the self incompatibility.

Or

Write short notes on :

(*i*) Types of pollination

(*ii*) Structure of stigma and style.

7. What is embryogeny ? Describe the pattern of development of dicot and monocot embryo.

Or

Write short notes on :

(*i*) Polyembryony

(*ii*) Causes and application of apomixis.

GROUP – B

(OLD SYLLABUS)

(REPRODUCTIVE BIOLOGY OF ANGIOSPERM)

SECTION – A

1. Answer *all* questions : 2 × 6

   (*a*) Pollen Viability.

   (*b*) Types of ovule.

   (*c*) Double fertilization.

   (*d*) Apomixis.

   (*e*) GSI

   (*f*) Path of pollen tube.

SECTION – B

Answer **all** questions : 12 × 4

2. Describe the process of microsporogenesis in plants. 12

Or

Write short notes on : 6 × 2

(*i*) Contribution of P. Maheshwari

(*ii*) Contribution of B. M Johri.

3. Discuss the organization and ultrastructure of mature embryo sac. 12

Or

Write short notes on : 6 × 2

(*i*) Megagametogenesis

(*ii*) Tetrasporic embryosac.

4. Describe the basic concepts of self-incompatibility. 12

Or

Write short notes on : 6 × 2

(*i*) Adaptations of Pollination

(*ii*) Structure of stigma and style.

GROUP – B

(OLD SYLLABUS)

(REPRODUCTIVE BIOLOGY OF ANGIOSPERM)

SECTION – A

1. Answer *all* questions : 2 × 6

   (*a*) Pollen Viability.

   (*b*) Types of ovule.

   (*c*) Double fertilization.

   (*d*) Apomixis.

   (*e*) GSI

   (*f*) Path of pollen tube.

SECTION – B

Answer **all** questions : 12 × 4

2. Describe the process of microsporogenesis in plants. 12

Or

Write short notes on : 6 × 2

(*i*) Contribution of P. Maheshwari

(*ii*) Contribution of B. M Johri.

3. Discuss the organization and ultrastructure of mature embryo sac. 12

Or

Write short notes on : 6 × 2

(*i*) Megagametogenesis

(*ii*) Tetrasporic embryosac.

4. Describe the basic concepts of self-incompatibility. 12

Or

Write short notes on : 6 × 2

(*i*) Adaptations of Pollination

(*ii*) Structure of stigma and style.

5. Briefly describe photoperiodism and its effects on plants. 12

Or

Write short notes on : 6 × 2

(*i*) HIR

(*ii*) Photomorphogenesis.

SH BOT – 12

5th Semester Examination, 2021

Time : 3 hours

Full Marks : 60

Answer any **one** Group as per your Syllabus

Answer from **all** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

GROUP – A

(MODEL SYLLABUS)

(PLANT PHYSIOLOGY)

SECTION – A

1. Answer *all* questions : 1 × 8

(*a*) Which part of the cell contains water like substances with dissolved molecules and suspended in them ?

(*b*) Which potential is considered of negligible value ?

(*c*) _____ are the elements without which, the plants will not be able to complete its life cycle.

(*d*) The idea that plants need essential minerals was first proposed by _____ .

(*e*) IAA is the most common naturally occuring plant hormone of _____ class.

(*f*) The widely used rooting hormone is _____ .

(*g*) Phytochrome is a photosensitive pigment involved in _____ .

(*h*) The reversal of etiolation effected by light is called _____ .

SECTION – B

2. Answer any *eight* questions of the following within *two* or *three* sentences each : $1\frac{1}{2} \times 8$

(*a*) Aquaporins.

(*b*) Symplast.

(*c*) Chelating agents.

(*d*) Define facilitated diffusion.

(*e*) Antitranspirants.

(*f*) Define ethylene.

(*g*) What is cytokinin ?

(*h*) Define florigen,

(*i*) What is LER ?

(*j*) What is dormancy ?

SECTION – C

3. Answer any *eight* questions of the following within *75* words : 2×8

(*a*) Plasmolysis.

(*b*) Source-sink relationship.

(*c*) Beneficial elements.

(*d*) Antiport.

(e) Guttation.

(f) Abscisic acid

(g) Brassinosteroids.

(h) Vernalization.

(i) Causes of Senescence.

(j) Photomorphogenesis.

SECTION – D

Answer **all** questions of the following within **500** words : 6×4

4. Describe the mechanism of stomatal movement. 6

Or

Write short notes on : 3 × 2

(i) Cohesion-tension theory

(ii) Water potential.

5. Describe the role of essential elements and its deficiency symptoms in plants. 6

Or

Write short notes on : 3 × 2

(i) Active absorption

(ii) Electrochemical gradient.

6. Describe the discovery, chemical nature, bioassay and physiological roles of Auxin. 6

Or

Write short notes on : 3 × 2

(i) Jasmonic acid

(ii) Role of Gibberellins.

7. Describe briefly on photoperiodism in Plants. 6

Or

Write short notes on : 3 × 2

(i) HIR

(ii) Role of Phytochrome.

GROUP – B

(OLD SYLLABUS)

(PLANT PHYSIOLOGY)

SECTION–A

1. Answer *all* questions : 2 × 6

   (*a*) Guttation.

   (*b*) Passive absorption.

   (*c*) Jasmonic acid.

   (*d*) Seed dormancy.

   (*e*) Uniport

   (*f*) Translocation.

SECTION – B

Answer **all** questions : 12 × 4

2. Describe briefly on water potential and its components. 12

Or

Write short notes on : 6 × 2

(*i*) Ascent of sap

(*ii*) Transpiration.

3. What are macro and micro nutrients ? Discuss the role of essential elements in plants. 12

Or

Write short notes on : 6 × 2

(*i*) Proton ATPase Pump

(*ii*) Electro chemical gradient.

4. Describe the discovery, chemical nature, bioassay and physiological roles of Gibberellins. 12

Or

Write short notes on : 6 × 2

(*i*) Phloem loading

(*ii*) Source-sink relationship.

5. Describe the physiological mechanisms that protect plants against environmental stresses. 12

Or

Write short notes on : 6 × 2

(*i*) Osmotic adjustment

(*ii*) Compatible solute production.

5th Semester Examination, 2021

Time : 3 hours

Full Marks : 60

Answer any **one** Group as per your Syllabus

Answer from **all** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

GROUP – A

(MODEL SYLLABUS)

(ANALYTICAL TECHNIQUES IN PLANT SCIENCE)

SECTION – A

Answer the following questions in *one* word : 1 × 8

(*a*) The magnification power of a compound microscope does not depend upon _____ .

(*b*) The resolving power of TEM is derived from _____ .

(*c*) _____ is used in electron microscope.

(*d*) The half life of a radioisotope is _____ .

(*e*) In chromatography, the stationary phase can be _____ supported on a solid.

(*f*) Superposition of waves give rise to _____ .

(*g*) Who is regarded as the father of biostatistics.

(*h*) Variables whose values can be expressed numerically are called _____ .

SECTION – B

2. Answer any *eight* questions of the following within *two* or *three* sentences each : $1\frac{1}{2} \times 8$

(*a*) Define cryofixation.

(*b*) What is negative staining.

(*Continued*)

(*c*) What is $CsCl_2$ gradient ?

(*d*) Define autoradiography.

(*e*) What is Freeze etching ?

(*f*) Define GLC.

(*g*) What is affinity chromatography ?

(*h*) What is dispersion ?

(*i*) Define mode.

(*j*) Define correlation.

SECTION – C

3. Answer any *eight* questions of the following within *75* words : 2×8

(*a*) Shadow casting

(*b*) Freeze Fracture.

(*c*) Analytical centrifugation.

(*d*) Pulse chase experiment.

(*e*) Sucrose density gradient.

(*Turn Over*)

(*f*) X-ray crystallography.

(*g*) SDS-PAGE

(*h*) Representation of Data.

(*i*) *t*-test

(*j*) Population.

SECTION – D

Answer **all** questions of the following within **500** words : 6×4

4. Describe briefly on transmission and scanning electron microscopy and its uses. 6

Or

Write notes on : 3 × 2

(*i*) Fluorescence microscopy

(*ii*) Flow cytometry.

5. Discuss the principle and application of spectrophatometry in biological research. 6

Or

Write notes on : 3 × 2

(*i*) Radioisotopes and its use in research

(*ii*) Ultracentrifugation.

6. Describe the principle and application of Electrophoresis for separation of proteins. 6

Or

Write notes on : 3 × 2

(*i*) Affinity chromatography

(*ii*) HPLC.

7. Describe with examples for chi-square test for goodness of fit. 6

Or

Write notes on : 3 × 2

(*i*) Standard Deviation

(*ii*) Representation of Data.

GROUP – B

(OLD SYLLABUS)

(STRESS BIOLOGY)

SECTION–A

1. Answer *all* questions : 2 × 6

   (*a*) Define adaptation.

   (*b*) PR protein

   (*c*) Role of Jasmonate.

   (*d*) Carotenoids.

   (*e*) Peroxidase

   (*f*) Osmotic adjustment.

SECTION – B

Answer all questions : 12 × 4

2. Give an account of acclimation and adaptation subjected to different stress. 12

Or

Write notes on : 6 × 2

(*i*) Chilling stress

(*ii*) Types of environmental stresses.

3. Briefly describe the water stress and its effects on plants. 12

Or

Write notes on : 6 × 2

(*i*) Systemic acquired resistance

(*ii*) Hypersensitive reaction.

4. Describe briefly on ROS scavenging mechanism in plants. 12

Or

Write notes on : 6 × 2

(*i*) Calcium modulation

(*ii*) Production of ROS in plants.

5. Discuss the role of polyploidy and mutation in crop improvement. 12

Or

Write notes on : 6 × 2

(*i*) Inbreeding depression

(*ii*) Distant hybridization.

5th Semester Examination, 2021

Time : 3 hours

Full Marks : 60

Answer any **one** Group as per your Syllabus

Answer from **all** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

GROUP – A

(MODEL SYLLABUS)

(NATURAL RESOURCE MANAGEMENT)

SECTION – A

1. Answer the following questions in *one* word : 1 × 8

(*a*) The micro-organisms which helps in formation of soil is _____ .

5. Discuss the role of polyploidy and mutation in crop improvement. 12

Or

Write notes on : 6 × 2

(*i*) Inbreeding depression

(*ii*) Distant hybridization.

5th Semester Examination, 2021

Time : 3 hours

Full Marks : 60

Answer any **one** Group as per your Syllabus

Answer from **all** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

GROUP – A

(MODEL SYLLABUS)

(NATURAL RESOURCE MANAGEMENT)

SECTION – A

1. Answer the following questions in *one* word : 1 × 8

(*a*) The micro-organisms which helps in formation of soil is _____ .

5. Discuss the role of polyploidy and mutation in crop improvement. 12

Or

Write notes on : 6×2

(*i*) Inbreeding depression

(*ii*) Distant hybridization.

5th Semester Examination, 2021

Time : 3 hours

Full Marks : 60

Answer any **one** Group as per your Syllabus

Answer from **all** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

GROUP – A

(MODEL SYLLABUS)

(NATURAL RESOURCE MANAGEMENT)

SECTION – A

1. Answer the following questions in *one* word : 1×8

(*a*) The micro-organisms which helps in formation of soil is _____ .

(e) Significance of forest.

(f) Geothermal resources.

(g) Ecological foot print.

(h) National efforts on resource management.

(i) Conservation and management of resources.

(j) GIS.

SECTION – D

Answer **all** questions of the following within **500** words : 6 × 4

4. Describe the concept and approaches of sustainable utilization of natural resources.

Or

Write notes on :

(i) Silviculture

(ii) Water harvesting technology.

5. Describe the significance threats and management strategies of Biodiversity.

Or

Write notes on :

(i) Significance of forest in India

(ii) Management of forest.

6. Describe briefly on renewable and non-renewable sources of energy.

Or

Write notes on :

(i) Participatory Resource Appraisal

(ii) Practices in resource management.

7. Describe briefly on International efforts in resource management and conservation.

Or

Write notes on :

(i) Waste management

(ii) Resource accounting.

GROUP – B

(OLD SYLLABUS)

(PLANT BREEDING)

SECTION – A

1. Answer *all* questions : 2 × 6

   (*a*) Breeding systems.

   (*b*) Hybridization.

   (*c*) Monogenic Inheritance.

   (*d*) Applications of heterosis.

   (*e*) Vegetative propagation.

   (*f*) Crop improvement.

SECTION – B

Answer **all** questions : 12 × 4

2. Discuss the breeding systems and modes of reproduction in crop plants. 12

Or

Write notes on : 6 × 2

(*i*) UIndesirable consequences of plant breeding

(*ii*) Achievements of plant breeding.

3. Give a brief account of centres of origin and domestication of crop plants. 12

Or

Write notes on : 6 × 2

(*i*) Plant genetic resources

(*ii*) Selection methods for cross pollinated plants.

4. Describe the quantitative inheritance by giving example of inheritance of kernel colour in wheat. 12

Or

Write notes on : 6 × 2

(*i*) Polygenic inheritance

(*ii*) Concept of quantitative inheritance.

SH BOT—11

2020

(5th Semester)

Time : 3 hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(REPRODUCTIVE BIOLOGY OF ANGIOSPERMS)

SECTION – A

1. Answer *all* questions : 2×6

   (*a*) Contributions of E Strasburger

   (*b*) Tapetum is essential for pollen development, explain

   (*c*) Caruncle

(*d*) Name of four methods to overcome incompatibility

(*e*) Polyembryony

(*f*) Anatropous ovule.

SECTION – B

Answer **all** questions : 12×4

2. Describe the structure and functions of anther through a transverse section. 12

Or

Write notes on : 6×2

(*i*) Structure of pollen wall

(*ii*) Development of male gametophyte.

3. Give an account of various types of embryo sac development in plants with diagram. 12

(*Continued*)

Or

Write notes on : 6×2

(*i*) Development of monosporic embryo sac

(*ii*) Synergids.

4. Discuss different types of pollinations and adaptations of cross pollination. 12

Or

Write notes on : 6×2

(*i*) Mixed pollination

(*ii*) Self-incompatibility.

5. Give brief account of different stages of development of a dicot embryo. 12

Or

Write notes on : 6×2

(*i*) Apomixis

(*ii*) Seed dispersal mechanisms.

———————

SH BOT—12

2020

(5th Semester)

Time : 3 hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(PLANT PHYSIOLOGY)

SECTION – A

1. Answer *all* questions : 2×6

   (*a*) Solute potential

   (*b*) Symplast

   (*c*) Stratification

   (*d*) Florigen

(*e*) Brassinosteroids

(*f*) Chelating agents.

SECTION – B

Answer **all** questions : 12×4

2. Explain the cohesion-tension mechanism leading to absorption of water. 12

Or

Write notes on : 6×2

(*i*) Mechanism of stomatal movement

(*ii*) Apoplast vs. Symplast.

3. Explain different types transports of solutes across membrane with diagram. 12

Or

Write notes on : 6×2

(*i*) Roles of Ca, Mg and N in plants

(*ii*) Beneficial elements.

4. Explain the pressure-flow model for translocation of solute from source to sink. 12

Or

Write notes on : 6×2

(*i*) Physiological roles of ABA

(*ii*) Physiological roles of Auxins.

5. Give a brief account on discovery, chemical nature and roles of phytochrome in photomorphogenesis. 12

Or

Write notes on : 6×2

(*i*) Photoperiodism in flowering

(*ii*) Vernalisation.

———————

SD BOT—01

2020

(5th Semester)

Time : 3 hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(STRESS BIOLOGY)

SECTION – A

1. Answer *all* questions : 2 × 6

(*a*) Compatible solutes

(*b*) Superoxide radicals

(*c*) Superoxide dismutase

(*d*) Hypersensitive reaction

(*e*) Photoprotection

(*f*) Freezing injury.

SECTION – B

Answer **all** questions : 12 × 4

2. Give an account of different types of environmental stresses encountered by plants. 12

Or

Write notes on : 6 × 2

(*i*) Acclimation

(*ii*) High temperature stress.

3. What is salinity stress ? Explain plant mechanisms to tolerate such stress. 12

Or

Write notes on : 6 × 2

(*i*) Pathogenesis-related proteins

(*ii*) Role of Jasmonates in insect-resistance.

4. Discuss the role of calcium in signal transduction to abiotic stress. 12

Or

Write notes on : 6 × 2

(*i*) Oxidative stress

(*ii*) Phospholipid in cell-signaling.

5. Discuss the various mechanisms adapted by plants to water deficit and drought stress. 12

Or

Write notes on : 6 × 2

(*i*) Heat-shock proteins

(*ii*) Flooding and oxygen deficit.

SD BOT—02

2020

(5th Semester)

Time : 3 hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(PLANT BREEDING)

SECTION – A

1. Answer *all* questions : 2 × 6

   (*a*) Germplasm

   (*b*) Allopolyploidy

   (*c*) Emasculation

   (*d*) Interspecific hybridisation

   (*e*) Discontinuous variation

   (*f*) Negative heterosis.

SECTION – B

Answer **all** questions : 12 × 4

2. Give a brief account of achievements of plant breeding. 12

Or

Write notes on : 6 × 2

(*i*) Modes of asexual reproduction in plants

(*ii*) Objectives of plant breeding.

3. What is hybridisation ? Explain the procedure, advantages and limitations of hybridisation in self and cross pollinated plants. 12

Or

Write notes on : 6 × 2

(*i*) Crop domestication

(*ii*) Acclimatisation.

4. Explain polygenic inheritance taking kernel colour in wheat as an example. 12

Or

Write notes on : 6 × 2

(*i*) Continuous variation

(*ii*) Characters of Qualitative traits.

5. Discuss the concepts of inbreeding depression and heterosis in plant breeding. 12

Or

Write notes on : 6 × 2

(*i*) Autopolyploidy in breeding

(*ii*) Role of biotechnology in crop improvement.

———————

SH BOT–11

2019

(5th Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(REPRODUCTIVE BIOLOGY OF ANGIOSPARM)

SECTION – A

1. Answer *all* questions : 2 × 6

(*a*) Contribution of P Maheswari

(*b*) Name a plant where pollinia are found.

(*c*) How many nuclei are found in a typical embryosac ?

(*d*) Name a cleistogamous flower.

(*e*) What is the main constituent of pollenkit ?

(*f*) What is the process of development of embryo from zygote ?

SECTION – B

Answer **all** questions : 12 × 4

2. What is microsporogenesis. Discuss the process leading to the formation of mature pollen grain.

Or

Write notes on :

(*i*) Scope of palynology

(*ii*) Contribution of S. G. Nawaschin to the field of Botany.

3. Give an account of structure and organisation of typical embryosac of Angiosperm.

Or

Write notes on :

(*i*) Caruncle

(*ii*) Bisporic embryosac.

4. What do you mean by in-vitro fertilization ? Discuss the in-vitro fertilization in plants.

Or

Write notes on :

(*i*) Double fertilization

(*ii*) Path of pollen grain.

5. Discuss the development of a typical Dicot embryo.

Or

Write notes on :

(*i*) Apomixis

(*ii*) Helobial Endosperm.

———————

SH BOT–12

2019

(5th Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(PLANT PHYSIOLOGY)

SECTION – A

1. Answer the following : 2 × 6

(*a*) Symplastic movement

(*b*) Chelating agents

(*c*) Antiport

(*d*) Phloem unloading

(*e*) Seed dormancy

(*f*) Name four cytochromes.

SECTION – B

Answer **all** questions : 12 × 4

2. What is transpiration ? Discuss the mechanism and factors affecting transpiration. 12

Or

Write notes on : 6 × 2

(*i*) Cohesion-tension theory

(*ii*) Water potential.

3. What are micronutrients ? Give a detail account of essential micronutrient and deficiency symptoms. 12

Or

Write notes on : 6 × 2

(*i*) Electrochemical gradients

(*ii*) Proton AT Pase pumps.

4. Give the experimental evidence in support of phloem as the site of sugar translocation. 12

Or

Write notes on : 6 × 2

(*i*) Physiological role of cytokinin

(*ii*) Chemical Nature of Ethylene.

5. What is flowering stimulus ? Describe the synthesis and role of florigen for flowering of short day plants. 12

Or

Write notes on : 6 × 2

(*i*) Photomorphogenesis

(*ii*) High irradiance responses (HIR).

———————

SD BOT– 01

2019

(5th Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(STRESS BIOLOGY)

SECTION – A

1. Answer *all* questions of the following : 2 × 6

(*a*) Acclimation

(*b*) Calcium modulation

(*c*) Reactive oxygen species

(*d*) Adaptation in plants

(*e*) Chilled tolerant plants

(*f*) Salinity stress.

SECTION – B

Answer **all** questions : 12 × 4

2. What do you mean by Acclimation ? Write a brief on adaptation in plants.

Or

Write notes on :

(*i*) Role of jasmonate

(*ii*) Pathogen related protein.

3. What do you mean by stress and stress physiology ? Write a brief on salinity stress and temperature stress.

Or

Write notes on :

(*i*) Explanatory role on jasmonate

(*ii*) Systematic aquired resistance.

4. Discuss the role of reactive oxygen species in production and scavenging mechanism.

Or

Write notes on :

(*i*) Calcium modulation

(*ii*) Phospholipid signalling.

5. Discuss the developmental and physiological mechanism that protect plants against environment stress.

Or

Write notes on :

(*i*) Aerenchyma development

(*ii*) Compatible solute production.

———————

SD BOT—02

2019

(5th Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(PLANT BREEDING)

SECTION – A

1. Answer *all* questions : 2×6

(*a*) Aim of plant breeding.

(*b*) Domestication of crop plants.

(*c*) Emasculation.

(*d*) Methods for vegetative propagation.

(*e*) Epistasis.

(*f*) Inbreeding depression.

SECTION – B

Answer **all** questions : 12 × 4

2. Write the process of plant breeding. Discuss the advantages and disadvantages of plant breeding. 12

Or

Write notes on : 6 × 2

(*i*) Cybrids

(*ii*) Release of new varieties.

3. What is acclimatization ? Discuss different methods of selection for cross pallinated plants. 12

Or

Write notes on : 6 × 2

(*i*) Plant genetic resources

(*ii*) Hybridisation procedure for self pallinated plants.

4. Define inheritance. Describe the concept and mechanism of Quantitative inheritance with example. 12

Or

Write notes on : 6 × 2

(*i*) Genotype

(*ii*) Monogenic inheritance.

5. What is mutation ? Discuss the role of gene mutation in crop improvement with example. 12

Or

Write notes on : 6 × 2

(*i*) Allopolyploidy

(*ii*) Heterosis.

———————

SH BOT—11

2018

(5th Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(REPRODUCTIVE BIOLOGY OF ANGIOSPERMS)

SECTION – A

1. Answer *all* questions : 2×6

   (*a*) Contribution of G.B. Amici.

   (*b*) How many types of Pollen Tetrad is seen in Angiosperms ?

   (*c*) What is Caruncle ?

(*d*) What is the condition when anther and stigma mature at same time ?

(*e*) Function of Tapetum.

(*f*) Function of Haustorial cell.

SECTION – B

Answer all questions : 12×4

2. Write a brief account of History and scope of Embryology.

Or

Write notes on :

(*i*) Development of male gametophyte in Angiosperm

(*ii*) Structure of Pollen wall.

3. What is sporogenesis ? Enumerate the development of female gametophyte in Angiosperm.

Or

Write notes on :

(*i*) Polygonum type of embryo sac

(*Continued*)

(*ii*) Egg apparatus.

4. What do you mean by self incompatibility in plants ? Describe various types of self incompatibility in plants.

Or

Write notes on :

(*i*) Adaptation for cross pollination

(*ii*) GSI and SSI.

5. Give an account of the structure and nature of Endosperm in Angiosperm.

Or

Write short notes on :

(*i*) Dicot embryo

(*ii*) Polyembryony.

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2018

(Semester – V)

Time : 2½ hours

Full Marks : **60**

The figures in the right hand margin indicate marks.
Answer from both the Sections as per direction.

(PLANT PHYSIOLOGY)

Section-A

*Answer **all** questions*

1. Answer the following : *(2x6=12)*

   (a) Significance of Transpiration
   (b) Molecular Structure of water
   (c) Apoplast
   (d) Macronutrients
   (e) Donon an Equilibrium
   (f) Day Neutral plants

Section-B

*Answer **all** questions* *(12x4=48)*

2. (a) What is absorption of water ? Describe the mechanism of absorption of water and factors affecting absorption.

OR

(b) Write short notes on :
(i) Physical force theory
(ii) Wilting and guttation

3. (a) Give an account of transport of ions across cell membrane.

OR

(b) Write short notes on :
(i) Mass flow of ions
(ii) Role of essential elements

4. (a) Discuss the chemical nature and physiological role of Aurein.

OR

(b) Write short notes on :
(i) Abscissic Acid
(ii) Proton A T Pase Pump

5. (a) What is photoperiodism ? Describe the different types of plants in response to the photoperiod.

OR

(b) Write short notes on :
(i) Low Energy Response and High energy response
(ii) Vernalin.

SD BOT-01

2018

(5th Semester)

Time : $2\frac{1}{2}$ hours

Full Marks : 60

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(STRESS BIOLOGY)

SECTION—A

1. Answer *all* questions : 2 × 6

   (*a*) Salinity stress

   (*b*) Adaptation in plants

   (*c*) Chilled tolerant plants

   (*d*) Acclimation

(*e*) Reactive oxygen species

(*f*) Role of jasmonate.

SECTION–B

Answer **all** questions : 12 × 4

2. What do you understand by stress and stress physiology ? Write in brief water and temperature stress in plants ?

Or

Write notes on :

(*i*) Hyper sensitive reaction

(*ii*) Mediation of insect and disease resistance by jasmonate.

3. Discuss the developmental and physiological mechanism that protect plants against environment stress.

Or

Write notes on :

(*i*) Osmotic adjustment

(*ii*) Compatible solute production.

4. Discuss the role of calcium modulation and phospholipid signaling in stress sensing mechanism in plants.

Or

Write notes on :

(*i*) Role of Nitric oxide in stress sensing mechanism

(*ii*) Pathogenesis related proteins.

5. Discuss the role of reactive oxygen species in production and scavenging mechanism.

Or

Write notes on :

(*i*) Aerenchyma development

(*ii*) Root : Shoot ratio.
