No. of Printed Pages : 4

Sem-V-Bot-CC-11
(Reg&Back)

2022

Time - 3 hours

Full Marks - 60

*Answer **all groups** as per instructions.*
Figures in the right hand margin indicate marks.
Candidates are required to answer
in their own words as far as practicable.
Draw labelled diagrams wherever necessary.

GROUP – A

1. Fill in the blanks. (all) [1 × 8

(a) A group of pollen grains in a pollen sac are united in a single compact mass known as _____ .

(b) The inner most layer of anther wall around sporogeneous tissue is called _____ .

(c) The specialized cells present between vascular supply of the ovule and the chalazal end of the embryo sac is called _____ .

(d) When pollens of a flower pollinate any other flower on the same plant is called _____ .

(e) Perisperm is the _____ tissue of embryo.

P.T.O.

(f) When pollen tube enters into the ovule through chalazal end is called _____ .

(g) The triploid nucleus formed after double fertilization is called _____ .

(h) The accessory covering of certain seeds that develops from the seed stalk is called _____ .

GROUP – B

2. Write notes on <u>any eight</u> of the following within two to three sentences each. [1½ × 8

(a) MGU

(b) Polyads

(c) Megagametogenesis

(d) Synergids

(e) Micropyle

(f) Recurrent apomixis

(g) Cleistogamy

(h) Emasculation

(i) Helobial endosperm

(j) Zoochory

GROUP – C

3. Explain any eight of the following within 75 words each. [2 × 8

(a) Pollen germination

(b) Pseudomonas

(c) Anther wall

(d) Orthotropous ovule

(e) Structure of embryosac

(f) Two methods to overcome self incompatibility

(g) Stub pollination

(h) Polyembryony

(i) Pollen wall proteins

(j) Embryogenesis

GROUP – D

*Answer **any four** questions in 500 words each.*

4. Describe the process of microsporogenesis in angiosperms. [6

5. Describe briefly the development of male gametophyte in angiosperms. [6

6. Describe the developmental pattern of mono, bi and tetrasporic embryosac. [6

7. Describe the process of megasporogenesis in detail. [6

8. Describe various types of pollination found in angiosperms. [6

9. Describe the development and functions of Endosperm. [6

10. Describe the structure and dispersal mechanisms of seed. [6

No. of Printed Pages : 4

Sem-V-Bot-CC-12
(Reg&Back)

2022

Time - 3 hours

Full Marks - 60

*Answer **all groups** as per instructions.*
Figures in the right hand margin indicate marks.
Candidates are required to answer
in their own words as far as practicable.
Draw labelled diagrams wherever necessary.

GROUP – A

1. Fill in the blanks. (all) [1 × 8

(a) The specific heat capacity of pure water is _____ .

(b) Girdling helps in making a fruit of _____ size.

(c) The pressure flow hypothesis was first proposed by _____

(d) The rate of uptake of photosynthesis per unit weight of sink tissue is known as _____ .

(e) _____ is a necessary component of nitrogenase enzyme in plants.

(f) In proton pump, _____ enzyme is involved.

P.T.O.

(g) Mineral ions cross plasma membrane by a _____ mechanism.

(h) The hypothetical hormone responsible for vernalization is _____.

GROUP – B

2. Write notes on <u>any eight</u> of the following within two to three sentences each. [1½ × 8

(a) Diffusion pressure deficit

(b) P-proteins

(c) Micronutrients

(d) Hydroponics

(e) Chlorosis

(f) Symport

(g) Chemical nature of phytochrome

(h) Hormonal root pruning theory

(i) Thermodormancy

(j) Seed quiescence

GROUP – C

3. Explain any eight of the following within 75 words each. [2 × 8

(a) Transpiration pull

(b) Essential elements

(c) Biosynthesis of Auxins

(d) Florigen

(e) Facilitated diffusion

(f) Carriers

(g) Role of hormone in senescence

(h) Viviparous germination

(i) Photo periodism

(j) Significance of seed dormancy

GROUP – D

*Answer **any four** questions in 500 words each.*

4. What is water potential ? Describe its various components. [6

5. What is Transpiration ? Describe the mechanism of stomatal movement. [6

6. Enumerate Proton ATpase pump in plants. [6

7. Describe physiological effects of Gibberellins. [6

8. Give an account of Vernalization. [6

9. What do you mean by Senescence ? Describe different patterns of senescence. [6

10. Give an account of chelation in biological system. [6

No. of Printed Pages : 4

Sem-V-Bot-DSE-1
(Reg&Back)

2022

Time - 3 hours

Full Marks - 60

*Answer **all groups** as per instructions.*
Figures in the right hand margin indicate marks.
Candidates are required to answer
in their own words as far as practicable.
Draw labelled diagrams wherever necessary.

GROUP – A

1. Fill in the blanks (all). [1 × 8

(a) The first electron microscope was dicovered by _____ .

(b) The 3D images are formed by _____ microscope.

(c) High activity of aldolase helps in the diagnosis of _____ .

(d) The process of separation of the cell homogenate into fractions by spinning them at very high speed is called _____ .

(e) The mobile phase in gas-liquid chromatography is _____

(f) Agarose is a linear _____ polymer.

P.T.O.

(g) _____ electrophoresis used to separate proteins from a mixture basing on their mass / charge ratio.

(h) _____ is the positional measure of central tendency.

GROUP – B

2. Write nptes on any eight of the following within two to three sentences each. [1½ × 8

(a) Magnification of microscope

(b) Dichroic mirror

(c) Shadow casting

(d) Svedberg unit

(e) Radioactivity in biological research

(f) Two principles of chromatography

(g) What are molecular ions ?

(h) What is AGE ?

(i) What is data ?

(j) Define Biostatistics.

GROUP – C

3. Write notes on any eight of the following within 75 words each. [2 × 8

(a) Freeze etching

(b) Two principles of microscopy

(c) Auto-radiography

(d) Pulse-Chase experiment

(e) Spectrophotometry

(f) Ultra centrifugation

(g) Ascending chromatography

(h) X-ray crystallography

(i) Degree of freedom

(j) Variance

GROUP – D

*Answer **any four** questions in 500 words each.*

4. Give an account of Transmission Electron Microscope. [6

5. What is flow cytometry ? Give an elaborate account of it. [6

6. Give an account of density gradient centrifugation and its application. [6

7. Describe the principles of Spectrophotometry. [6

8. Describe the technique, application and advantages of HPLC. [6

9. Describe PAGE method in electrophoresis. [6

10. What do you mean by dispersion ? Describe different measures of dispersion. [6

No. of Printed Pages : 4

Sem-V-Bot-DSE-2
(Reg&Back)

2022

Time - 3 hours

Full Marks - 60

*Answer **all groups** as per instructions.*
Figures in the right hand margin indicate marks.
Candidates are required to answer
in their own words as far as practicable.
Draw labelled diagrams wherever necessary.

GROUP – A

1. Fill in the blanks (all). [1 × 8

(a) Fossil fuels like petrol, diesel and coal are _____ natural resources.

(b) _____ is the major green house gas.

(c) The 3R concept means "Reduce", "Reuse" and _____.

(d) _____ is the site for the disposal of solid waste by burial.

(e) _____ is the total green house gas emission caused by an individual, organisation, place or product expressed as CO_2 equivalent.

(f) Timber is a _____ forest product.

P.T.O.

(g) The three levels of biodiversity are genetic diversity, _____ and ecosystem diversity.

(h) Sanctuaries, National parks and _____ belong to in situ conservation of biodiversity.

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

(a) What is sustainable development ?

(b) What is bioprospecting ?

(c) What is geothermal energy ?

(d) What is IPR ?

(e) What is ecosystem diversity ?

(f) What is Biosphere reserve ?

(g) What is Red Data Book ?

(h) What is ecological footprint ?

(i) What is GIS ?

(j) What are the minor forest products ?

GROUP – C

3. Write short notes on <u>any eight</u> of the following within 75 words each. [2 × 8

(a) Agricultural land

(b) Ground water

(c) Rain water storage

(d) CBD

(e) National Biodiversity Action Plan

(f) Importance of Biodiversity

(g) Solar energy

(h) Bio-energy resources

(i) EIA

(j) Incineration

GROUP – D

*Answer **any four** questions in 500 words each.*

4. Describe different types of natural resources. [6

5. Give an account of soil degradation and its management. [6

6. Give an account of threats and management strategies of biodiversity. [6

7. Describe the causes of forest depletion and its management. [6

8. Give an account of renewable and non-renewable sources of energy. [6

9. Give an account of contemporary practices in resource management. [6

10. Describe different methods of waste disposal. [6