Total No. of Printed Pages—3

5 SEM TDC BOT M 1

2018

(November)

BOTANY

(Major)

Course : 501

(Development and Reproduction of Angiosperm)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Answer the following as directed : 1×5=5

(i) In stem, xylem is referred to as exarch / endarch / mesarch / polyarch.

(Choose the correct answer)

(ii) _____ tissue contributes the most to the mechanical strength of plants.

(Fill in the blank)

(iii) Hydrophytes can float on water due to the presence of _____ cells.

(Fill in the blank)

(iv) Seed develops from ovary / ovule / embryo / embryo sac.

(Choose the correct answer)

(v) The female gametophyte of a typical dicot plant at the time of fertilization is _____ celled structure.

(Fill in the blank)

(b) Write precise notes on the following : 3×3=9

(i) Function of stomata

(ii) Apomixis

(iii) Haustorial structures

2. Write explanatory notes on *either* [*(a)* and *(b)*] *or* [*(c)* and *(d)*] : 5×2=10

(a) Tetrasporic type of embryo sac with examples

(b) Leaf gaps and leaf trace

(c) Fibres and tracheids

(d) Importance of palynology

(Continued)

3. What do you mean by secondary growth in thickness? With suitable sketches, describe the phenomenon in a dicotyledonous stem that you have studied. 2+2+8=12

Or

Write on the following : 4×3=12

(a) Tunica and corpus

(b) Heartwood and sapwood

(c) Structure and functions of periderm

4. What is microspore? Describe the formation of microspores within the microsporangium. Draw diagram where necessary. 2+8+2=12

Or

What is endosperm? How is it formed in seeds of spermatophyte? Give examples with sketches. 2+6+4=12

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Total No. of Printed Pages—4

5 SEM TDC BOT M 3

2018

(November)

BOTANY

(Major)

Course : 503

(Genetics, Plant Breeding and Biostatistics)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Express the following in *1* word : 1×3=3

(i) An alternative form of gene

(ii) Replacement of purine base by another purine base

(iii) The superiority of an F_1 hybrid over both the parents

(b) Choose the correct answers of the following : 1×2=2

(i) Phenotypic ratio of blending inheritance is 2 : 1/3 : 1/1 : 2 : 1.

(ii) The point on the scale above and below which lies one-half of the scores is called median/mode/mean.

(c) Write short notes on the following : 3×3=9

(i) Multiple alleles

(ii) In vitro culture

(iii) Tests of significance

2. (a) What are monohybrid and dihybrid experiments? Define 'Law of Independent Assortment'. Explain with an example that Mendel's law of independent assortment is not universally applicable. 2+2+4=8

Or

Distinguish between transition and transversion. Describe briefly the types of transition mutation found in living organisms. 2+6=8

(b) Write short notes on any *two* of the following : 3×2=6

(i) Gene cloning

(ii) Crossing-over with an example

(iii) Inheritance of kappa particles

(iv) Concept of gene mapping

3. Define 'hybridization' and state its objectives. Discuss briefly the different steps of hybridization procedure. Also define back-cross breeding. 2+2+5+2=11

Or

Write explanatory notes on the following : 6+5=11

(a) Apomixis and its types

(b) Mass selection and its importance

4. Calculate mean, median and mode from the data given in the following table : 3×3=9

Class interval	*Frequency*
10–14	4
15–19	5
20–24	8
25–29	7
30–34	15
35–39	13
40–44	7
45–49	6
50–54	2
55–59	3

Or

Describe the following : 4+5=9

(a) Standard deviation

(b) Role of statistics in biological science

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Total No. of Printed Pages—3

5 SEM TDC BOT M 5

2018

(November)

BOTANY

(Major)

Course : 505

(Functional and Chemical Biology)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Choose the correct answer of the following : 1×3=3

(i) Cellulose/Starch/Inulin is a polymer of fructose.

(ii) The lost amino acid of a polypeptide chain is known as methionine/ N-terminal amino acid/C-terminal amino acid.

(iii) Peroxidase/Lygase/Protease breaks down hydrogen peroxide to water and oxygen.

Total No. of Printed Pages—3

5 SEM TDC BOT M 5

2018

(November)

BOTANY

(Major)

Course : 505

(Functional and Chemical Biology)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Choose the correct answer of the following : 1×3=3

(i) Cellulose/Starch/Inulin is a polymer of fructose.

(ii) The lost amino acid of a polypeptide chain is known as methionine/ N-terminal amino acid/C-terminal amino acid.

(iii) Peroxidase/Lygase/Protease breaks down hydrogen peroxide to water and oxygen.

(b) Fill in the blanks : 1×3=3

(i) Dietary proteins are the sources of _____.

(ii) In a polysaccharide the individual monosaccharides are linked by _____ bonds.

(iii) _____ are covalently attached to many different proteins to form glycoproteins.

(c) Write short notes on the following : 3×3=9

(i) Photosynthetic pigments

(ii) Unsaturated fatty acids

(iii) Glycosidic bonds

2. What are the nitrogenous bases of nucleic acid? Define nucleosides and nucleotides. Write about the functions of nucleotides and define Chargaff's rule. 2+2+4+3=11

Or

What are phytohormones? Discuss briefly the role of gibberellins and abscisic acid in plants. 2+4½+4½=11

3. Define source and sink relationship, and elaborate its mechanisms. 3+7=10

Or

How can you differentiate primary and secondary metabolites in plants? Write briefly the biological role of phenols and alkaloids. 2+4+4=10

4. Write short notes on (any *four*) : 3×4=12

(a) Functions of auxin

(b) Biological functions of lipids

(c) Polysaccharides as reserve food material

(d) Anthocyanins

(e) Flavonoids

(f) Reducing and non-reducing sugar

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Total No. of Printed Pages—3

5 SEM TDC BOT M 7

2018

(November)

BOTANY

(Major)

Course : 507

(Plant Ecology, Phytogeography and Evolution)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Express in *one* word : 1×3=3

(i) The succession resulting from changes brought about by factors external to the community

(ii) Species confined to a particular area

(iii) The transitional zone between terrestrial and aquatic ecosystems

(b) Fill in the blanks : 1×2=2

(i) Lawrence's principle is related with _____ phytogeography.

(ii) Jean Baptiste de Lamarck published his theory in the book _____.

(c) Give precise accounts on the following : 3×3=9

(i) Pyramid of biomass

(ii) IUCN and Red Data Book

(iii) Raunkaier's law of frequency

2. Define ecosystem. Write about the structure and function of ecosystem. 2+4+4=10

Or

What is plant community? Describe elaborately the analytical and synthetic characters of plant community. 2+4+4=10

3. What is greenhouse effect? What are the present and possible impacts of global warming? Mention the role of IPCC towards global warming threat. 3+5+4=12

Or

Answer/Explain the following : 4×3=12

(a) Define and distinguish between *ex situ* and *in situ* conservations.

(b) Morphological differences between hydrophytes and xerophytes

(c) WWF

(Continued)

4. Write precise notes on the following : 6+6=12

(a) Brief outline on phytogeographical regions of India

Or

Principles of phytogeography

(b) Modern theory regarding biochemical origin of life

Or

Geological time scale

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