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5 SEM TDC BOT M 1

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(November)

BOTANY

(Major)

Course : 501

(Development and Reproduction of Angiosperm)

Full Marks : 48

Pass Marks : 19 (Backlog)/ 14 (2014 onwards)

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following as directed : 1×5=5

(a) Parenchyma /Cambium /Sclerenchyma tissue contributes the most mechanical strength to plants.

(Choose the correct one)

(b) Multiple epidermis on dorsal and ventral sides of the leaf is found in ____.

(Fill in the blank)

(2)

(c) Tissue system associated with conduction of water, minerals and food materials.

(Express in one word)

(d) Endosperm of the seed develops from the _____.

(Fill in the blank)

(e) Development of more than one embryo within the same embryo sac.

(Express in one word)

2. Write briefly on the following : $2+2+2+3=9$

(a) Types of stomata in dicot plants

(b) Types of vascular bundles

(c) Parthenogenesis and apospory

(d) Haustorial structure of endosperm

3. Write on either [(a) and (b)] or [(c) and (d)] :

$5 \times 2 = 10$

(a) Activity of cambium ring

(b) Bisporic type of embryo sac with example

(c) Quiescent centre or quiescent zone

(d) Paleontology

4. Define anomalous secondary growth in thickness with suitable sketches. Describe the phenomenon in a dicotyledonous stem that you have studied. $3+6+3=12$

Or

Compare between the following : $3 \times 4 = 12$

- (a) Tunica and corpus
 - (b) Fascicular and interfascicular cambiums
 - (c) Phellem (cork) and phelloderm
 - (d) Anatomy of dorsiventral leaf and isobilateral leaf
5. Differentiate between microsporogenesis and megasporogenesis. Trace the development of embryo after syngamy in a dicot plant. $4+8=12$

Or

Write accounts on the following : $4 \times 3 = 12$

- (a) Apomixis
- (b) Nuclear type endosperm
- (c) Monosporic and Tetrasporic embryo sac

2016

(November)

BOTANY

(Major)

Course : 503

(Genetics, Plant Breeding and Biostatistics)

Full Marks : 48

Pass Marks : 19 (Backlog)/14 (2014 onwards)

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. (a) Choose the correct answer of the following : 1+1=2
- (i) An alternative form of a gene is known as genome/factor/allele.
 - (ii) Emasculation is essential in bisexual/unisexual/neutral flowers.
- (b) Express the following in one word : 1×3=3
- (i) The fixed position of a chromosome occupied by a gene

- (ii) The superiority of an F_1 generation over both of its parents
- (iii) An enzyme which induces internal cuts in DNA molecule

2. Write short notes on the following : $3 \times 3 = 9$

- (a) Turner's syndrome
- (b) Transgene
- (c) Probability test

3. (a) What do you mean by Mendelian test cross? Explain with an example that Mendel's law of independent assortment is not applicable to linked genes. $2+6=8$

Or

Differentiate transition from 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 : $3 \times 2 = 6$

- (i) Multiple alleles
- (ii) XX female, XO male type of sex determination
- (iii) Gene cloning
- (iv) Inheritance of kappa particles

4. What are the objectives of plant breeding? Discuss briefly different steps of plant hybridization procedure. $3+8=11$

Or

Write explanatory notes on the following : $5\frac{1}{2}\times 2=11$

- (a) Apomixis and its types
(b) Pure line selection and its importance
5. Tabulate the following 50 scores into a frequency distribution table using 5 (five) as the class interval. Finally compute the mean, median and mode from the frequency distribution : $3+6=9$

80, 40, 65, 40, 80, 65, 43, 80, 65, 50
75, 90, 55, 90, 75, 55, 90, 75, 60, 95
80, 65, 95, 75, 90, 60, 45, 80, 65, 85
70, 85, 45, 65, 80, 95, 65, 80, 95, 65
65, 85, 75, 90, 80, 60, 65, 45, 40, 70

Or

Write short notes on the following : $4\frac{1}{2}\times 2=9$

- (a) Test of significance
(b) Standard error

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5 SEM TDC BOT M 5

2016

(November)

BOTANY

(Major)

Course : 505

(Functional and Chemical Biology)

Full Marks : 48

Pass Marks : 19 (Backlog)/14 (2014 onwards)

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. (a) Choose and write the correct answer of the following : 1×3=3
- (i) Colchicine / Cocaine / Atropine / Cytosine is not an alkaloid.
 - (ii) Fat/Amino acid/Chlorophyll/Terpenoid is a secondary metabolite.
 - (iii) Auxin/Gibberellin/Abscisic acid is a growth-inhibiting hormone.

(2)

(b) Fill in the blanks : $1 \times 2 = 2$

(i) Chlorosis is a condition in which leaves produce insufficient ____.

(ii) ____ alkaloid extracted from *Rauwolfia* is used in the treatment of hypertension.

2. Write short notes on the following : $3 \times 3 = 9$

(a) Function of messenger RNA

(b) Metabolic pathway in plants

(c) Flavonoids

3. (a) What are secondary metabolites? What are the various types of plant secondary metabolites? Give an account of biological role of alkaloids. $3+4+4=11$

Or

(b) What are phenolics? What are their properties? Discuss the various roles of phenolics. $2+3+6=11$

4. (a) What are source and sink in plants? Write briefly about the biochemical activities involved in source-sink relationship in plants. $3+8=11$

(3)

Or

- (b) What are lipids? Mention the different categories of lipids. Give a brief account of the biological function of lipids. $3+4+4=11$

5. Write short notes on any *four* of the following : $3 \times 4 = 12$

- (a) Terpenoids
- (b) Function of chlorophyll
- (c) Phytochrome
- (d) Storage products in plants
- (e) Metabolic concept
- (f) Physiological role of auxin

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5 SEM TDC BOT M 7

2016

(November)

BOTANY

(Major)

Course : 507

(Plant Ecology, Phytogeography and Evolution)

Full Marks : 48

Pass Marks : 19 (Backlog)/14 (2014 onwards)

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. (a) Fill in the blanks : 1×3=3

(i) Transitional zone between terrestrial and aquatic ecosystems is known as ____.

(ii) The amount of organic matter or biomass produced by an individual organism, population, community or ecosystem during a given period of time and area is known as ____.

(iii) The branch of biogeography that is concerned with the geographic distribution of plant species and their influence on the earth's surface is known as ____.

(b) Choose the correct one : $1 \times 2 = 2$

(i) Which of the following is always upright ecological pyramid?

- (1) Pyramid of number
- (2) Pyramid of biomass
- (3) Pyramid of energy

(ii) Which of the following indicates the relationship between different groups of organism and also helps in contrasting the story of life's journey on this planet?

- (1) Fossil
- (2) Speciation
- (3) Isolation

2. Give precise notes on the following : $3 \times 3 = 9$

- (a) 10% energy flow in the ecosystem
- (b) Raunkiaer's law of frequency
- (c) IUCN and Red Data Book

3. Define ecosystem. Write about the structure and function of an ecosystem. $2+5+5=12$

(3)

Or

Define environmental pollution. Write about the sources and impact of water pollution on the ecosystem. 2+4+6=12

4. Define plant adaptation. Compare among hydrophytic, xerophytic and epiphytic adaptations. 1+11=12

Or

Write short notes on the following : 4×3=12

- (a) Conservation of biodiversity
 - (b) Greenhouse effect and global warming
 - (c) Physiographic factors
5. Write precise notes on the following : 5×2=10
- (a) Phytogeographical regions of India

Or

Major division of phytogeography

- (b) Vestigial organs in human, animal and plants

Or

Organic evolution and its main postulates
