

Total No. of Questions : 15]

Roll No.....

[Total No. of Printed Pages :

HSE2KROX**9319 - A****BIOLOGY****(Botany)**

Time : 1½ Hours + 15 Minutes extra to read the question paper]

[Maximum Marks: 35]

(Long Answer Type Questions)

1. Explain with the help of diagram the development of a mature embryo sac from a megaspore mother cell in an angiosperm.

Or

Pollination is an important phenomenon in the life of a flowering plant. Describe the agencies responsible for this.

2. A homozygous tall pea plant with green seeds is crossed with a dwarf pea plant with yellow seeds.

(a) What would be the phenotype and genotype of F_1 .

(b) Work out phenotypic and genotypic ratio of F_2 generation with the help of checker board.

Or

Discuss the characteristics of genetic code.

Turn Over

HSE2KROXI - 9319 - A

(Short Answer Type Questions)

3. With the help of an example, describe co-dominance.
4. Explain the terms :
 - (i) Explant
 - (ii) Callus
 - (iii) Micropropagation.
5. Write short note on Bt. Cotton.
6. Explain the concept of pyramid of numbers.

(Very Short Answer Type Questions)

7. Name the interaction in each of the following :
 - (i) Cuscuta growing on a shoe flower plant.
 - (ii) Mycorrhizae living on the roots of higher plants.
8. What is Ecological Niche ?
9. Distinguish between :
Endangered, Vulnerable and rare species.
10. Which is the major air pollutant ? Give its source.

(Objective Type Questions)

11. Embryo sac is found in :
 - (a) Endosperm
 - (b) Embryo
 - (c) Ovules
 - (d) Seed
12. In the flowering plants, after ovary develops into fruit and mature into seeds.
13. Wrinkled seeds is a dominant trait in garden pea. (True/False)
14. Removal of anthers from a bisexual flower to make it female flower. (Give the technical one word)

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Roll No.....

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HSE2KROXI**9319-B****BIOLOGY****(Botany)**

Time : 1½ Hours + 15 Minutes extra to read the question paper

[Maximum Marks:**(Long Answer Type Questions)**

1. What is Semiconservative DNA Replication ? Describe the mechanism of the same with suitable diagrams.

Or

Define multiple allele with the help of suitable example.
Explain the phenomenon of multiple allelism.

2. What are Negative Interactions ? Describe various negative interactions found among organisms.

Or

Give an account of energy flow in an ecosystem.

(Short Answer Type Questions)

3. Write short notes on :

- (i) Hydrophilly
- (ii) Entomophilly
- (iii) Anemophilly.

Turn Over

HSE2KROXI - 9319 - B

4. Enunciate Mendel's law of segregation with the help of Monohybrid cross.
5. Write explanatory note on single cell protein (SCP).
6. What is Biodiversity ? Why has it become important recently ?

(Very Short Type Questions)

7. Re-arrange the following in order of their position from outside in a carpel :
 - (i) Nucellus
 - (ii) Embryo sac
 - (iii) Ovary
 - (iv) Integuments
8. Name the water fern that is an excellent biofertilizer for rice cultivation. What helps the fern to do so ?
9. Why would biopiracy affect India most ?
10. What are Threatened Species ? Name their three types in order of the danger of extinction they face.

(Objective Type Questions)

11. Pick the odd one out :
 - (a) Chalazogamy
 - (b) Porogamy
 - (c) Mesogamy
 - (d) Allogamy
12. A hyaline bisexual and self-fertilized flower that does not open at all is chasmogamous. (True/False)
13. Preserving seeds of plants, vegetatively propagating plants, cells, sperms, ova at -196°C (a temperature of liquid nitrogen) is called (Give one word)
14. Define the term biome.
15. The phenotype ratio obtained by Mendel in his famous monohybrid cross in F_2 generation was

Total No. of Questions : 15]

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HSE2KROXI**9319-C****BIOLOGY****(Botany)****Time : 1½ Hours + 15 Minutes extra to read the question paper****[Maximum Marks:****(Long Answer Type Questions)**

1. Describe the structure of DNA as proposed by Watson and Crick.

Or

A snapdragon plant homozygous for red flowers when crossed with a white flowered plant of the same species produced pink flowers in F_1 generation.

- (a) What is this phenotypic expression called ? $\rightarrow$ *incomplete a*
(b) Work out the cross to show F_2 generation when F_1 was self pollinated. Give the phenotypic ratios of F_2 generation *1:2:1*.

2. Give an account of ecological succession on bare rock.

Or

What kind of threats to the biodiversity may lead to its loss ?

Turn Over

HSE2KROXI - 9319 - C

(Short Answer Type Questions)

3. Describe the structure of a typical monosporic embryo sac found in flowering plants.
4. Write a note on Central Dogma of molecular biology.
5. What is Biofortification ?
6. How do you distinguish between ectoparasite and endoparasite ?

(Very Short Answer Type Questions)

7. What is Micropropagation ?
8. What is BOD ? What does it mean if a water sample has more BOD ?
9. What do you mean by Cloning ?
10. Distinguish between Habitat and Ecological Niche.

(Objective Type Questions)

11. Define Porogamy.
12. Parthenogenesis is the presence of more than one embryo in the seed. (True/False)
13. During DNA replication, one new strand is formed in continuous stretch in the 5'—3' direction. It is called strand. Other strand formed from okazaki fragments is termed is Strand.
14. The number of young ones produced by an organism during its life time is called (Give one word)

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HSEIIKPJXII

34019-A

BOTANY

(Biology)

Time : 1½ Hours + 15 Minutes extra to read the question paper]

[Maximum Marks: 35

(Long Answer Type Questions)

Describe the development of female gametophyte with the help of suitable diagrams:

Or

(a) Draw a labelled diagram of an albuminous seed (L.S.).

(b) How are seeds advantages to flowering plants ?

5

Briefly describe the chromosomal basis of inheritance.

Or

What is 'Semi-conservative' DNA replication ? How was it experimentally proved and by whom ?

5

(Short Answer Type Questions)

What are the essential requirements of the genetic material ?

3

Write a note on Biopiracy.

3

Describe the various applications of Tissue Culture in brief.

3

Give an account of Ecological Succession.

3

SEIIKPJXII—34019-A

Turn Over

(Very Short Answer Type Questions)

7. What is double fertilisation:?
8. Explain predation with example.
9. Why a need is felt to conserve biodiversity ?
10. List the effect of Ozone depletion.

(Objective Type Questions)

11. What is 'Central Dogma' ?
12. Removal of Anthers from a bisexual flower to make it female flower
(Give the technical one word)
13. Flow of energy in an ecosystem is unidirectional.
(True/False)
14. in biology means disappearance of species from the world.
(Fill in the blank)

Green house effect is due to :

- | | |
|-------------------|-------------------|
| (a) SO_2 | (b) CO_2 |
| (c) CO | (d) O_2 |

HSEIRKO - 13

81019-P

BOTANY

(Biology)

e : 1½ Hours + 15 Minutes extra to read the question paper]

[Maximum Marks: 35

Section – A

What is double fertilization ? Who discovered double fertilization in angiosperms ? List the post fertilization changes in angiospermic ovule.

Or

Explain the development of female gametophyte in angiosperms. 5

What are ecological interactions? Explain predation and parasitism with suitable examples.

Or

What are agrochemicals ? Name three agrochemicals and explain their effects on environment. 5

Section – B

List three differences between self and cross pollination. 3

Differentiate between co-dominance and incomplete dominance in tabular form. 3

Explain briefly the idea of polygenic inheritance. 3

Turn Over

EIRKO-13—81019-P
-19-P

6. Explain three applications of tissue culture in plants.

Section – C

7. What is central dogma?
8. What are Bt. crops? List one Bt. crop.
9. Explain briefly energy flow in ecosystem.
10. What are biosphere reserves?

Section – D

11. (i) The dihybrid ratio of 9 : 3 : 3 : 1 proves the law of.....

(Fill in the blank)

- (ii) Ecology is the study of :

(a) Organism and environment

(b) Man and environment

(c) Soil and water

(d) Husband and wife

(Choose the correct option)

- (iii) Write True or False :

When a plant of hot climate is transferred to colder regions, it gets an injury called chilling.

- (iv) Name two bioherbicides.

- (v) Name the most commonly used bio-weapon.

BOTANY

Maximum Marks - 35

Time Allowed: 1½ Hours

(Fifteen Minutes Extra to read the Question Paper)

(Long Answer Type Questions)

What is Semiconservative DNA replication? Describe the mechanism on the same with suitable diagrams.

Or

Who proposed the concept of Lac operon?

- (b) Draw the labelled schematic representation of a Lac operon.
- (c) Explain how does this operon get switched 'on' and 'off'.

What are Negative interactions? Describe various negative interactions among organisms.

Or

- (a) What are hot spots of Diversity?
- (b) List four main criteria for determining a particular place as a Hot spot.
- (c) Among the hot spots of the world, list two which are located in India.

(2)

(Short Answer Type Questions)

3. What is Apomixis and what is its importance? 3
4. In a *Pisum sativum*, the pods may be inflated (I, dominant) or constricted (i, recessive). What proportion of the offspring in the following crosses would be expected to be inflated?
- (a) II x ii
- (b) Ii x ii .
- (c) II x II 3
5. Do you think microbes can also be used as source of energy? If yes how? 3
6. Distinguish between Ectoparasite and Endoparasite. 3

(Very Short answer Type Questions)

7. The following very short answer type questions of two marks, each may be answered in a few words or few sentences or as may be required:
- (a) Write briefly about Xenogamy. 2
- (b) Define : (a) Hybridization (b) Hardening. 2
- (c) What is Ecology? Who coined the term? 2
- (d) Differentiate between *In-situ*. and *Ex-situ* Conservation of Biodiversity. 2

(Objective Type Questions)

8. Do as directed: 1
- (i) Define Apomixis.

- (ii) Number of Meiotic divisions required to produce 200 seeds of Pea would be
- A 200
 - B. 400
 - C. 300
 - D. 250
- (iii) Introns are essential parts of gene. (True/False)
- (iv) An unorganised undifferentiated mass of actively dividing cells is called as.
- (v) Biogas rich in Methane is produced by



HSEIRK014

1703 - Z

BOTANY

[Maximum Marks - 35]

Time Allowed: 1½ Hours

(Fifteen Minutes Extra to read the Question Paper)

(Long Answer Type Questions)

1. What is Co-dominance? Describe with special reference to ABO human blood group.

Or

Define Transcription. Explain the process in detail.

Explain with the help of two examples, how pyramid of numbers and pyramid of biomass can look inverted.

Or

Why should we conserve Biodiversity?

(Short Answer Type Questions)

Female gametophyte in Angiosperms.

4. Differentiate between Continuous and Discontinuous variations. 3
5. What are Biofertilizers? Write the sources of biofertilizers. 3
6. Differentiate between Mutualism and Commensalism. Give example of each. 3

(Very Short Answer Type Questions)

7. The following very short answer type questions of two marks, each may be answered in a few words or few as may be required:
 - (a) What is Micropropagation? 2
 - (b) Define the terms: 2
 - (i) Somatic embryo
 - (ii) Somatic hybrids.
 - (c) List two adaptive features evolved in parasites enabling them to live successfully on their host.
 - (d) Distinguish between Primary productivity and Secondary productivity.

(Objective Type Questions)

- . Choose the correct/most appropriate answer and write it in your Answer-book
 - (i) Define Allogamy.

- (ii) An anther having four microsporocytes shall produce pollen grains
- A. 24
 - B. 12
 - C. 8
 - D. 16
- (iii) The Term Genetics was first used by Benzeer. (True/False)
- (iv) Haploid culture technique was developed by
- (v) The term used for live microbial food supplement is



Total No. of Questions : 8]

[Total No. of Printed Pages : 2

HSEIRKN15
6418-X
BOTANY
(Biology)

Time : 1 ½ Hours]

[Maximum Marks: 35

(Long Answer Type Questions)

5 Each

1. Define cross pollination. Name the contrivances that favour it and describe any two of them.

Or

Describe the process of double fertilization. What is its significance?

2. What is multiple allelism ? Explain with the help of an example.

Or

Define genetic code Point out its characteristics.

(Short Answer Type Questions)

3 Each

3. Why did Mendel select garden pea for his experiments ?
4. Define tissue culture Name any *three* applications of tissue culture.

Turn Over

HSEIRKN15-6418-X

5. Name the various interactions in a biotic community and describe any one of them.
6. Suggest any *three* measure for controlling pollution or our lakes

(Very Short Answer Type Questions)

7. The following very short answer type questions of 2 marks, each may be answered in a few words or few sentences or as may required.

(a) Point out the advantages of vegetative reproduction in plants

(Any two points)

(b) Define polyploid breeding. Name the chemical used in inducing polyploidy.

(c) Point out at any three advantages of tissue culture technique

(d) How is parasitism different from predation ?

(Objective .Type Questions)

11

8. Choose the correct/most appropriate answer and write in your answer-book :

(i) Define mortality rate.

(ii) Translation occurs in :

(a) Nucleus

(b) Cytoplasm

(c) Both (a) and (b) .

(d) None of these

(iii) Succession on a burnt forest represents

(iv) Define national park.

(v) The synthesis of organic molecules by green plants represents primary productivity. (False/True)

SEIRKN15-6418-X

L-18-X

Total No. of Questions : 8]

[Total No. of Printed Pages :

HSEIRKN15

6418-Y

BOTANY

(Biology)

Time : 1 ½ Hours]

[Maximum Marks:

(Long Answer Type Questions)

5 Ea

- 1 Define cross pollination. Name the contrivances that favour it and describe any two of them.

Or

Describe the process of double fertilization. What is its significance ?

2. What is multiple allelism ? Explain with the help of an example.

Or

Define genetic code Point out its characteristics.

(Short Answer Type Questions)

3 I

3. Why did Mendel select garden pea for his experiments ?
- 4 Define tissue culture Name any *three* applications of tissue culture.

Turn Over

HSEIRKN15-6418-Y

5. Name the various interactions in a biotic community and describe any one of them.
6. Suggest any *three* measure for controlling pollution or our lakes

(Very Short Answer Type Questions)

3 Each

7. The following very short answer type questions of 2 marks, each may be answered in a few words or few sentences or as may be required.

(a) Point out the advantages of vegetative reproduction in plants

(Any *two* points)

(b) What are the advantages of biogas over LPG.

(c) Biofertilizers are more desirable than chemical fertilizers. Justify.

(d) Name any *two* National Parks and *two* sanctuaries.

(Objective .Type Questions)

1 Each

8. Choose the correct/most appropriate answer and write in your answer-book :

(i) Define natality rate.

(ii) Translation occurs in :

(a) Nucleus

(b) Cytoplasm

(c) Both (a) and (b) .

(d) None of these

(iii) Succession on a burnt forest represents

(iv) Water pollution is the most severe pollution problem in Kashmir.
(False/True)

(v) The breakdown of dead organic matter is carried out by the organisms called

Total No. of Questions : 11]

[Total No. of Printed Page

XIIRK

1102

BOTA

(Biol

Time : 1 ½ Hours]

[Maximum Mar

(Long Answer Type Questions)

5

Which Mendel's law of inheritance is universally accepted and without any exception. State law with an example.

Or

- (a) Who proposed the concept of lac operon ?
- (b) Draw labelled schematic representation of lac operon.
- (c) Explain how does this operon get switched 'on' and 'off'.

Describe the components of an ecosystem.

Turn Over

Or

- (a) What are hotspots of Biodiversity ?
- (b) List main four criteria of determining a particular place as a hotspot.
- (c) Among the hotspots of world, list two which are located in India. ∴

(Short Answer Type Questions)

3 each

3. Draw the vertical section of Maize grain and label :

- (a) Pericarp
- (b) Scutellum
- (c) Coleoptile
- (d) radicle.

4. In *Pisum sativum*, the pods may be inflated (I-dominant) or constricted (i-recessive). What proportion of the offspring in the following cross would be expected to be inflated ?

- (a) II X ii
- (b) Ii x ii
- (c) II x II

5. Do you think microbes can also be used as source of energy ? If yes, how ?

6. Distinguish between ectoparasite and endoparasite.

XIIRKN16-11021-X

E-21-X

(Very Short Answer Type Questions)

7. Who did discover double fertilization and in which plants ?
8. Define the terms :
 - (a) Somatic embryo
 - (b) Somatic hybrids
9. List any two adaptive features evolved in parasites enabling them to live successfully on their hosts.
10. Distinguish between primary productivity and secondary productivity

(Objective Type Questions)

1 ea

11. (i) Define Allogamy. .
- (ii) An anther having four microsporocytes shall produce pollen grains :
 - (a) 24
 - (b) 12
 - (c) 8
 - (d) 16

(Choose the correct one)

- (iii) The term genetics was first used by Benzer

(True/False)

- (iv) Haploid culture technique was developed by

(Fill in the blank)

- (v) The term used for live microbial food supplement is

No. of Questions : 11]

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HSEIRKON17
15320-A
BOTANY
(Biology)

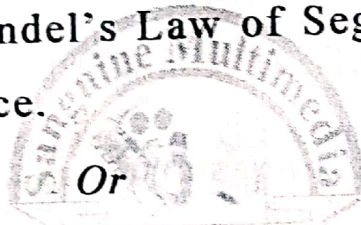
: 1 ½ Hours]

[Maximum Marks: 35

(Long Answer Type Questions)

5 each

State and explain the Mendel's Law of Segregation. Give reasons for its universal acceptance.



Explain the mechanism of gene regulation in prokaryotes with the help of lac-operon.

With the help of *one* example in each explain briefly the following terms :

- (a) Predation
- (b) Parasitism
- (c) Commensalism
- (d) Mutualism

Also categorize them as positive and negative interactions.

EIRKON17-15320-A
-20-A

Turn Over

Or

With the help of flow diagram explain the flow of energy in an Ecosystem.

(Short Answer Type Questions)

3

3. Define double fertilizations found in angiosperms. Point out its significance.
4. What do you understand by a Test Cross ? What is its importance ?
5. What are the possible benefits and hazards of GM crops ?
6. Name various Ozone depleting substances. What is the effect of Ozone layer depletion on living objects ?

(Very Short Answer Type Questions)

7. Differentiate between Anemophilous and Entomophilous flowers.
8. Write a short note on Polyembryony
9. What do you understand by SCP ? Give two examples of SCPs.
10. What does the Ex Situ conservation of biodiversity mean ? Give t examples of Ex Situ conservation strategy.

HSEIRKON17-15320-A

D-20-A

(Objective Type Questions)

1 each

11. Write the correct/most appropriate answer in your answer-book :

(i) Which of the following is a Mendelian Principle ?

- (a) Co-dominance (b) Multiple alleles
(c) Segregation (d) Linkage

(ii) Azadirachtin is a biofertilizer. (True/False)

(iii) Which one of the following is green manure/biofertilizer ?

- (a) Sesbania (b) Rice
(c) Oat (d) Maize

(iv) Animals that can tolerate a narrow range of salinity are called
(Fill in the blank).

(v) Tip of an ecological pyramid is occupied by :

- (a) Producers (b) Herbivores
(c) Carnivores (d) None of these

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20-A

Total No. of Questions : 11]

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12th RKDO18

20303-X

BOTANY

(Biology)

Time : 1½ Hours]

[Maximum Marks : 35

(Long Answer Type Questions)

5 each

1. What do you mean by semiconservative mode of replication ?
Explain the mechanism of same with suitable diagrams.

Or

State the principle of independent assortment. Explain the same with dihybrid cross.

2. What is primary productivity ?
(i) Why does it vary in different ecosystems ?
(ii) State the relationship between gross and primary productivity.

Or

State the function of a reservoir in a nutrient cycle. Explain the simplified model of carbon cycle in nature.

12th RKDO18—20303-X

D-3-X

Turn Over

(Short Answer Type Questions)

3 each

3. How does pollen mother cell develop into mature pollen grain ?
Illustrate the stages with well labelled diagram
4. Define Aponixes. Explain its significance. How can it be commercially used ?
5. State the importance of Biofortification.
6. What do you mean by population interaction ? Differentiate between :
 - (i) Mutalism and Competition
 - (ii) Parasitism and Predation

(Very Short Answer Type Questions)

2

7. What are the harmful effects of ozone depletion in stratosphere on living organisms ?
8. What is the function of histones in DNA packaging ?
9. Reteroviruses do not follow central dogma. Comment.
10. What do you mean by anther culture ? Comment.

(Objective Type Questions)

1

11. (i) Define hot spot.
 - (ii) Organization responsible for maintaining red data book is :

(a) IUCN	(b) WWP
(c) CITES	(d) IBWL

(iii) Bt-toxin is :

- (a) Intracellular lipid
- (b) Intracellular crystalline protein
- (c) Extracellular crystalline protein
- (d) Glycoprotein

(iv) Which of the following is not biofertilizer ?

- (a) Nostoc
- (b) Mycorrhiza
- (c) Agrobacterium
- (d) Rhizobium

(v) In typical embryo the nuclei are arranged as :

- (a) 3 + 2 + 3
- (b) 3 + 3 + 2
- (c) 2 + 3 + 3
- (d) 2 + 4 + 2

12th RKDO18—20303-X
D-3-X