



BARASAT GOVERNMENT COLLEGE

B.Sc. PART-III

TEST EXAMINATION, 2018

BOTANY (GENERAL)

Time allotted: 2 Hours

Full Marks: 50

1. Answer the following question in few words:

- | | |
|---|---|
| (a) What is Plasmid? | 1 |
| (b) Define Biotechnology. | 2 |
| (c) Name one tissue culture media. | 1 |
| (d) What is degree of freedom? | 1 |
| (e) What is protoplast culture? | 2 |
| (f) What is inbreed? | 1 |
| (g) Define mean. | 1 |
| (h) What is biostatistics? | 2 |
| (i) What is heterocyst? Mention one function of it. | 2 |
| (j) State the difference between pure line and mass line selection. | 2 |
| (k) What is leghaemoglobin? Mention its uses. | 2 |
| (l) Define cytoplasmic male sterility. | 2 |
| (m) Mention two applications of bioinformatics. | 2 |
| (n) What are restriction enzymes? Name one of them. | 2 |
| (o) Mention the importance of <i>Rauvolfia</i> . | 2 |
| (p) What is transgenic plant? | |

Answer any FOUR questions from the following:

6x4=24

- | | |
|---|-----|
| 2. What are mushrooms? Mention the steps of cultivation technique of <i>Pleurotus sp.</i> | 2+4 |
| 3. What is Artificial seed? State the application of plant tissue culture in agriculture. | 2+4 |
| 4. Write short notes on: | 3+3 |
| (i) Plant regeneration. | |
| (ii) Protoplast culture | |
| 5. What is organoleptic study of drugs? Describe organoleptic evaluation of crude drug. | 1+5 |
| 6. What is chi-square test? What is the importance of median and mode analysis? | 2+4 |



BGC/BSC/BOTH/SEM-I/C1/2019

BARASAT GOVERNMENT COLLEGE
B.Sc. SEMESTER- I,
DEPARTMENT OF BOTANY
CLASS TEST EXAMINATION, 2019
Paper- C-1

Time: 1 Hours

Full Marks: 25

The figures in margin indicate full marks

- 1. Answer any five from the following:** **1x6=6**
- a. Name the principal reserve food material found in Rhodophyceae (1)
 - b. What is dwarf male filament? (1)
 - c. What is caenobium? (1)
 - d. Name one alga with caenocytic filament. (1)
 - e. Mention the scientific name of a N₂ fixing alga. (1)
 - f. What is diatomaceous earth? (1)
- 2. Answer any three from the following:-** **3X3=9**
- a. Discuss the salient features of the class Phaeophyceae or Xanthophyceae. 3
 - b. Describe the apical cap formation of *Oedogonium* 3
 - c. Draw and describe the female reproductive structure of *Chara* 3
 - d. Explain briefly the phenomenon of alternation of generation in algae in chart form
- 3. Answer any two from the following:-** **5X2=10**
- a. Describe the asexual reproduction of *Oedogonium* or *Vaucharia* (3+2)
 - b. Describe in brief the thallus organization of algae with example (in chart form). 4+1
 - c. Draw and describe the ultra structure of Flagella. 5

BARASAT GOVT COLLEGE

B.Sc. Honours/ Programme 1st SEM Class Test, 2019

BOTHGEC01T/ BOTGCOR01T – BOTANY

Biodiversity (Microbes, Algae, Fungi)



F.M.=25

1X13=13

Q1. Answer the following questions:

i) What is plasmid?

প্লাসমিড কি ?

ii) Name one N_2 fixing algae.

নাইট্রোজেন অক্সিজেনবাহী শনাক্ত প্রকায়ক নাম লেখ,

iii) Give the scientific name of edible mushroom

শনাক্ত ভোজ্য অমশকৃষ্মের বিজ্ঞানমন্ডল নাম লেখ,

iv) What is the function of pili?

পিলাইর কাজ লেখ,

v) Name one algae used as food.

খাদ্য হিসেবে ব্যবহৃত শনাক্ত প্রকায়ক নাম লেখ,

vi) Write scientific name of a harmful mushroom.

শনাক্ত ক্ষতিকারক অমশকৃষ্মের বিজ্ঞানমন্ডল নাম লেখ,

vii) Name a RNA and a DNA Virus.

শনাক্ত DNA virus এর নাম লেখ,

viii) What is hold fast? Where do you find this?

হোল্ড ফাস্ট কি? কোথায় পাওয়া যায় ?

ix) What is holocarpic fungus?

হোলোকার্পিক ছত্রাক কী ?

x) What is prophage?

প্রোফেজ কি ?



xi) What is nanandrium?

ନାନାନ୍ଦ୍ରିୟମ କଣ? ଯେଉଁଠି?

xii) How many stages of spore are seen in *Puccinia*?

Puccinia ର ସ୍ପୋର ଚକ୍ରର କେତେ ପର୍ଯ୍ୟାୟ ଦେଖାଯାଏ ?

xiii) What is metula? Where do you find it?

ମେଟୁଲା କଣ? କେଉଁଠି ଦେଖାଯାଏ ?

2. Answer any one from each group

Group A

I) Write in brief about the beneficial role of bacteria.

ବାକ୍ଟିରିଆର କାର୍ଯ୍ୟକାରୀ ଭୂମିକା ସ୍ୱଳ୍ପରେ ବ୍ୟାଖ୍ୟା କର ।

4

OR

Draw the structure of TMV/ Bacteriophage.

TMV କିମ୍ବା ବ୍ୟାକ୍ଟିଫେଜର ଗଠନ ଚିତ୍ରଣ କର ।

Group B

II) Describe asexual reproduction in *Vaucheria* with diagram.

Vaucheria ର ଅକ୍ଷୟ ପ୍ରଜନନ ଚିତ୍ରଣ କର ।

4

OR

Write short note on algal biofertilizer.

ଶିଳ୍ପୀ ଲେଖ: କେଉଁଠି କେଉଁଠି

Group C

III) Describe the sexual reproduction in *Rhizopus*.

Rhizopus ର ଯୌନ ପ୍ରଜନନ ପ୍ରକ୍ରିୟା ବ୍ୟାଖ୍ୟା କର ।

4

OR

Enumerate the classification of fungi proposed by Hawksworth et. al. (1995).

Hawksworth et al (1955) ଦ୍ୱାରା ପ୍ରସ୍ତାବିତ ଫଙ୍ଗିର ସ୍ୱୀକୃତିଗତ ବର୍ଗୀକରଣ କର ।

BARASAT GOVERNMENT COLLEGE

B.Sc. (Hons) Semester II

Class Test-2019

BOTACOR03T (CC3)

Mycology and Plant Pathology



Time-1 Hour

F.M.-25

Q.1 Answer **any five** of the following.

1X5=5

- a) What is a holomorph and a teleomorph?
- b) What is dolipore septum and where do you find?
- c) Write two similarity between animal and fungi.
- d) What is a mycelium and a hypha?
- e) What is pathogenecity?
- f) What are obligate parasites? Give example.
- g) What do you mean by epiphytotic disease?
- h) What is a biotroph?

Q.2. Answer **any five** of the following.

3X5=15

- a) Draw and describe disease tringle.
- b) What are monocyclic, polycyclic and polyetic disease cycles?
- c) Discuss different type of fruiting bodies in Ascomycota.
- d) Discuss the methods of sexual reproduction in Ascomycota.
- e) Discuss sexual reproduction in *Rhizopus* and its significances.
- f) What is a dikaryotic life cycle?
- g) Write ~~note~~ on cell wall composition of fungi.
- h) Briefly describe different type of mycelial modification in fungi.

Q.3. Give an account on diferrent type of asexual spores produced in fungi

5

OR What is prosorus? Give an account of the life cycle of *Synchytrium*.

1+4=5



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 2nd Semester Examination, 2019



BOTACOR04T-BOTANY (CC4)

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks
Candidates should answer in their own words and adhere to the word limit as practicable
All symbols are of usual significance.

1. Answer briefly:

- (a) What is amphigastria? 1×6 = 6
- (b) What do you mean by eusporangiate type of sporangial development?
- (c) What is mixed type of sorus?
- (d) If the chromosome number in the leaf of *Funaria* is 10, what will be the chromosome number in the spores?
- (e) Name a gymnosperm with manoxylic wood.
- (f) How the phloem of gymnosperm differ from angiosperm?

2. Answer any **eight** questions from the following:

3×8 = 24

- (a) Write a brief note on the adaptations needed for transition to land habit.
- (b) State with reasons, which class is more advanced among Hepaticopsida and Bryopsida.
- (c) State the distinctive feature of *Sphagnum* leaf.
- (d) Draw a labelled diagram of L.S. of the archegoniophore highlighting the parts of archegonium.
- (e) Name one fossil pteridophyte and its identifying characters. 1+2
- (f) Draw and describe the spore producing structure of *Psilotum*. 1+2
- (g) What is the contribution of seed habit of pteridophytes in the evolution of seed plant?
- (h) Distinguish between perigynium and calyptra.
- (i) Why are the female cones of *Cycas* not considered as true cones?
- (j) Comment on the ovule of *Gnetum*.
- (k) Name the plant yielding Canada balsam. Mention two economic importance of *Pinus*. 1+2
- (l) Draw and label the longitudinal section of *Equisetum* cone.
- (m) What is the fate of amphithecium and endothecium in classes Hepaticopsida and Anthocerotopsida?

Answer any **two** questions from the following:

5×2 = 10

- (a) Give the ecological and economical significance of *Sphagnum*. 3+2
- (b) Draw a labelled diagram of the longitudinal section of the capsule of *Funaria*. 3+2
Explain the role of peristome in the dispersal of the spores.
- (c) Write a note on the stelar evolution of pteridophytes with examples. 5
- (d) What is sulphur dust of *Pinus*? Describe with labelled diagram the longitudinal section of female cone of *Pinus*. 1+2+2



Subject: Botany.
(Paper - BOTACOROST)

Time: 1 hour.

Full Marks: 25

Q1. Answer the following questions:

6x1 = 6.

- What is rachis?
- With example define zygomorphic flower.
- Give examples for gynostegium and gynostemium.
- What is the edible part of litchi and pomegranate.
- Give two examples of apocarpous pistil.
- What is the fruit type for fig.

Q2. Answer three of the following questions:

3x3 = 9

- With schematic diagrams and examples characterise different types of aestivation.
- With schematic diagrams and examples characterise different types of placentation.
- Give a brief idea about exalbuminous, endospermous and perispermous seeds with examples.
- Give a brief account of different types of flowers according to ovary position.
- Characterise spikelet inflorescence.

Q3. Answer any two of the following questions: 5x2 = 10

- With schematic diagrams and examples characterise different types of cohesion of 5 stamens.
- With schematic diagrams and examples give a brief account of schizocarpic fruits. 5
- Write short note on capitulum and cyathium inflorescence. $2\frac{1}{2} + 2\frac{1}{2} = 5$
- Define the following: zygomorphic flower, Panicle, perianth, receptacle, and involucrel bract. 5x1 = 5



BARASAT GOVERNMENT COLLEGE
B.Sc. SEMESTER- III,
DEPARTMENT OF BOTANY
CLASS TEST EXAMINATION, 2019
Paper- C-6
Part A

Time: 1 Hours

Full Marks: 25

The figures in margin indicate full marks

1. Answer any ⁶ five from the following:

1x6=6

- a. Which state of India is known as "Bowl of Rice"? (1)
- b. Name one bio-fertilizer for rice. (1)
- c. What type of fruits found in cereals? (1)
- d. Name (Scientific name) a plant with rich content of caffeine. (1)
- e. What are essential oils? (1)
- f. Why Millets are called Lazy man's crops? (1)

2. Answer any ³ four from the following:-

3X3=9

- a. How are leguminous plants beneficial to the environment? 3
- b. How would you compare Volatile oil with fixed oil? (3+2)
- c. Mentioning Scientific name, family parts use and economic importance of the followings
- i) Saffron and ii) clove $1 + \frac{1}{2} + \frac{1}{2} + 1$ ($1\frac{1}{2} + 1\frac{1}{2}$)
- or
- i) fennel and ii) black pepper
- d. Write short notes on Pear millets and finger Millets. ($1\frac{1}{2} + 1\frac{1}{2}$)

3. Answer any two from the following:-

5X2=10

- a) Write about the major species of Wheat cultivated as so far. Mention their scientific names with ploidy level in chart form 3+2=5
- b) Enumerate the classification of fibres based on origin in table format with examples 5
- c) Write down tea processing techniques with different steps 5



BGC/BSC/ BOTH/SEM-III/C6/2019

BARASAT GOVERNMENT COLLEGE
B.Sc. SEMESTER- III,
DEPARTMENT OF BOTANY
CLASS TEST EXAMINATION, 2019
Paper- C-6
Part B

Time: 1 Hours

Full Marks: 25

The figures in margin indicate full marks

1. Answer any five from the following:

1x6=6

- a. Rubber is obtained from which part of rubber tree? (1)
- b. What type of crop is sugarcane? (1)
- c. Mention use of the eyes of Potato. (1)
- d. What do you mean by robi crop and kharif crop? (1)
- e. Name Indian state, which is the largest producer of rice? (1)
- f. What are the main crops of India? (1)

2. Answer any three from the following:-

3X3=9

- a. What are the products and byproducts of Sugar cane? 3
- b. Classify vegetative oil according to their ability to absorb oxygen from atmosphere with example. 3
- c. What are the products and by-products of sugarcane Industry (1¹/₂+1¹/₂)
- e. Write in brief about health hazards of Tobacco. 3
- f. What do you mean by Center of origin? 3

3. Answer any two from the following:-

5X2=10

- a. Enumerate the therapeutic uses of *Digitalis* and *Papaver* 2¹/₂+2¹/₂=5
- b. How are essential oils extracted from plants 5
- c. Mentioning botanical name of source plant, health implication of ground nuts and linseed. 2¹/₂+2¹/₂
- c. Why Millets are called 'Poorman's cereal', maintaining their uses compare to two main cereal 1+2+2

BARASAT GOVERNMENT COLLEGE
DEPARTMENT OF BOTANY
B. Sc SEMESTER-III
MID TERM EXAMINATION- 2019
PAPER- BOTACOR07T
CELL BIOLOGY AND BIOMOLECULES

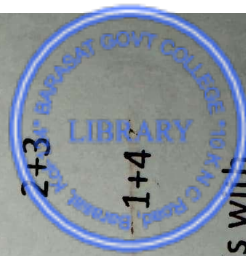
Date: 19.11.2019

Total Marks: 25

Time- 1 hrs

1. What is incomplete dominance? Give an example. 2
2. What is aneuploidy? 1
3. What is paracentric inversion? 1
4. What is penetrance and expressivity? 2
5. What is linkage and linkage group? 2
6. What is interference? 2
7. What are the types of duplication? Classify them.
8. Write down laws of probability. What is standard deviation?

9. What do you understand by epistasis? Describe the phenomenon of dominant epistasis with





BARASAT GOVERNMENT COLLEGE
DEPARTMENT OF BOTANY
B. Sc SEMESTER-III
MID TERM EXAMINATION- 2019
PAPER- BOTACOR07T
CELL BIOLOGY AND BIOMOLECULES

Date: 20.11.2019

Total Marks: 25

Time- 1 hrs

1. Why pedigree analysis used instead of linkage mapping for human? 2
 2. Two genes "a" and "b" lie on two different chromosomes at a distance 40cM and 20 cM from the centromere respectively. Comment on nature of linkage and interference. 2
 3. What is pleiotropy? Give an example. 2
 4. Why data of three factor cross is better than two factor cross in linkage mapping? 2
 5. Differentiate between translocation and crossing over. 2
 6. Mention the cytological effect of pericentric inversion. 5
- or
7. Differentiated between polygenic inheritance and Mendalian inheritance. 5
 8. Construct a linkage map showing the order of genes and distance between them 10
from the following progenies obtained from a test cross of a heterozygous tall, yellow, and round seeded plat.
Tall, Yellow, Round- 280
Dwarf, Yellow, Wrinkled- 156
Tall, Green, Wrinkled- 10
Tall, Yellow, Wrinkled- 87
Tall, Green, round- 160
Dwarf, green, Wrinkled- 288
Dwarf, Yellow, Round- 07
Dwarf, green, Round- 98
Calculate the coefficient of coincidence and interference.



BGC/BSC/ BOTH/SEM-III/C6/2019

BARASAT GOVERNMENT COLLEGE
B.Sc. SEMESTER- III,
DEPARTMENT OF BOTANY
CLASS TEST EXAMINATION, 2019
Paper- C-6
Part A

Time: 1 Hours

Full Marks: 25

The figures in margin indicate full marks

- 1. Answer any five from the following:** **1x6=6**
- a. Which state of India is known as “Boul of Rice”? (1)
- b. Name one bio-fertilizer for rice. (1)
- c. What type of fruits found in cereals? (1)
- d. Name (Scientific name) a plant with rich content of caffeine. (1)
- e. What are essential oils? (1)
- f. Why Millets are called Lazy man’s crops? (1)
- 2. Answer any four from the following:-** **3X3=9**
- a. How are leguminous plants beneficial to the environment? 3
- b. How would you compare Volatile oil with fixed oil? (3+2)
- c. Mentioning Scientific name, family parts use and economic importance of the followings
- i) Saffron and ii) clove ($1\frac{1}{2}+1\frac{1}{2}$)
- or
- i) fennel and ii) black pepper
- d. Write short notes on Pear millets and finger Millets. ($1\frac{1}{2}+1\frac{1}{2}$)
- 3. Answer any two from the following:-** **5X2=10**
- a) Write about the major species of Wheat cultivated as so far. Mention their scientific names with ploidy level in chart form 3+2=5
- b) Enumerate the classification of fibres based on origin in table format with examples 5
- c) Write down tea processing techniques with different steps 5



BGC/BSC/ BOTH/SEM-III/C6/2019

BARASAT GOVERNMENT COLLEGE
B.Sc. SEMESTER- III,
DEPARTMENT OF BOTANY
CLASS TEST EXAMINATION, 2019
Paper- C-6
Part B

Time: 1 Hours

Full Marks: 25

The figures in margin indicate full marks

1. Answer any five from the following:

1x6=6

- a. Rubber is obtained from which part of rubber tree? (1)
- b. What type of crop is sugarcane? (1)
- c. Mention use of the eyes of Potato. (1)
- d. What do you mean by robi crop and kharif crop? (1)
- e. Name Indian state, which is the largest producer of rice? (1)
- f. What are the main crops of India? (1)

2. Answer any three from the following:-

3X3=9

- a. What are the products and byproducts of Sugar cane? 3
- b. Classify vegetative oil according to their ability to absorb oxygen from atmosphere with example. 3
- d. What are the products and by-products of sugarcane Industry (1¹/₂+1¹/₂)
- e. Write in brief about health hazards of Tobacco. 3
- f. What do you mean by Center of origin? 3

3. Answer any two from the following:-

5X2=10

- a. Enumerate the therapeutic uses of *Digitalis* and *Papaver* 2¹/₂+2¹/₂=5
- b. How are essential oils extracted from plants 5
- c. Mentioning botanical name of source plant, health implication of ground nuts and linseed. 2¹/₂+2¹/₂
- c. Why Millets are called 'Poorman's cereal' , maintaining their uses compare to two main cereal 1+2+2



BARASAT GOVERNMENT COLLEGE

BOTANY B.Sc 2ND SEMESTER CLASS TEST **AT HOME** – 2020

ARCHEGONIAE - PTERIDOPHYTES

ATTEMPT ALL OF THE FOLLOWING QUESTIONS

DATE: 04/07/2020

MARKS =30

Q. 1 Which of the following is termed as sword fern?

A. *Drynaria*

B. *Nephrolepis*

C. *Vittaria*

D. *Dicranopteris*

Q. 2 Leaves of which of the following ferns is taken as vegetables in tropical areas?

A. *Cyathea*

B. *Marsilea*

C. *Salvinia*

D. *Adiantum*

Q. 3 Which of the following pteridophyte is also known as resurrection plant?

A. *Psilotum*

B. *Selaginella*

C. *Equisetum*

D. *Angiopteris evecta*

Q. 4 Organic pesticides are yielded by the members of

A. Polypodiaceae

B. Lycopodiaceae



C. Equisetaceae

D. none of these

Q. 5 The pteridophyte used as biofertilizer is

A. *Marattia*

B. *Ophioglossum*

C. *Azolla*

D. *Marsilea*

Q. 6 Which of the following is an indicator of pollution?

A. *Dryopteris*

B. *Adiantum*

C. *Selaginella*

D. *Lycopodium*

Q. 7 Which of the following genus has the characteristic feature of having largest number of chromosomes found in any plant?

A. *Sellaginella rupestris*

B. *Matteuccia struthiopteris*

C. *Ophioglossum vulgatum*

D. *Platycerium bifurcatum*

Q. 8 Peltate sporangiophore is present in

A. Lycopsida

B. Sphenopsida

C. Pteropsida

D. Psilotopsida

Q. 9 Homologous alternation of generation is observed in

A. *Selaginella*



B. *Lycopodium*

C. *Pteris*

D. *Psilotum*

Q. 10 The fossil remains of *Rhynia* and *Cooksonia* belong to which of the following geological period?

A. Cambrian

B. Ordovician

C. Devonian

D. Carboniferous

Q. 11. Which of the following is **NOT** necessary for seed formation?

A. Endosporic germination

B. Chalazal end

C. Micropyle

D. Integuments

Q. 12 Which of the following shows tendency towards seed habit?

A. *Lepidodendron*

B. *Lepidocarpon*

C. *Calamites*

D. *Sigillaria*

Q. 13 Which of the following is **not** true in connection with *psilotum*?

A. Presence of multicellular gemma

B. Presence of Chlorenchymatous layer in the stem

C. Presence of of siphonostelic stem

D. Presence of ligules

Q. 14 Each mature sporangial structure in *Psilotum* is



- A. bilobed
- B. tri-lobed
- C. four lobed
- D. None of the above

Q. 15. Which of the following member given underneath is a heterosporous pteridophyte?

- A. *Psilotum*
- B. *Equisetum*
- C. *Pteris*
- D. *Regnellidium*

Q. 16 Archegonium found in the pteridophytes is

- A. spherical
- B. rectangular
- C. flask shaped
- D. none of the above

Q. 17 Sporophyte developed as a result of apogamy has _____ chromosome number.

- A. n
- B. 2n
- C. 3n
- D. 4n

Q. 18 Failure of fertilization in the gametophytes can result in the formation of

- A. haploid sporophytes
- B. diploid sporophytes
- C. both A & B
- D. None of the above

Q. 19 Which of the following set of pteridophytes often exhibit apogamy?



A. *Osmunda*, *Adiantum*, *Pteridium*

B. *Lycopodium*, *Woodwardia*, *Equisetum*

C. *Osmunda*, *Equisetum*, *Tectora trifoliata*

D. None of the above is correct

Q. 20 Formation of gametophytic thallus from sporophyte is called

A. apospory

B. apogamy

C. heterospory

D. endospory

Q. 21 Which of the following group possess vascular canals and carinal canals?

A. Psilophytopsida

B. Psilotopsida

C. Lycopsidea

D. Sphenopsida

Q. 22 vascular cryptogams include

A. bryophytes and pteridophytes

B. pteridophytes and gymnosperms

C. only pteridophytes

D. only gymnosperms

Q. 23 Megaphyllous leaves are the characteristic feature of

A. Sphenopsida

B. Psilotopsida

C. Lycopsidea

D. Pteropsida

Q. 24 Presence of ligules is observed in



A. *Equisetum*

B. *Selaginella*

C. *Huperzia*

D. *Azolla*

Q. 25 Which of the following is the only genus which has tree habit in pteridophytes?

A. *Salvinia*

B. *Osmunda*

C. *Cyathea*

D. *Botryopteris*

Q. 26 Occasional heterospory due to difference in nutrition supply may be seen in

A. *Equisetum arvense*

B. *Lycopodium clavatum*

C. *Angiopteris evecta*

D. None of the above

Q. 27 Which of the following stellar structure is considered most primitive?

A. Protostele

B. Actinostele

C. Mixed protostele

D. Siphonostele

Q. 28 **phytoecdysones** present in some members of pteridophytes

A. helps in fertilization

B. prevents herbivory

C. helps in spore germination

D. helps in alternation of generation

Q. 29 Xeric characters is seen in



A. *Lycopodium*

B. *Equisetum*

C. *Psilotum*

D. Both B & C

Q. 30 Ferns can be used very well as

A. Ornaments

B. packaging materials

C. perfumes

D. antibiotics

Core Course IV: Archegoniate

Course Code: BOTACOR04T

DSM/BGC/BOT



Internal Examination, 2021

B.Sc Semester-I

Botany Hons

F.M-25

Time-1h

Q1. Answer Any 5

1x5=5

- a. Name one bacteria which is used as biopesticide.
- b. Name the causal organism of Plague.
- c. What is batch culture?
- d. Who proposed the three domain system of classification?
- e. What is the full form of PHB?
- f. Name one giant bacteria.
- g. What is the difference between pili and fimbriae.

Q2. Answer Any 3

2x3 =6

- a. What is pleomorphic bacteria. Give an example.
- b. What do you mean by Synchronous culture of bacteria.
- c. What is toxoid? Give an example.
- d. Write the difference between pili and flagella

Q3. Answer Any 3

3x3=9

- a. Write the functions of bacterial capsule.
- b. What do you mean by attenuated live vaccine? Give their advantages.
- c. Draw the bacterial growth curve. What is diauxic growth?
- d. What is the difference between Photolithotrophs and chemolithotrophs. Cite examples.

Q4. Answer any 1

5x1=5

- a. With suitable picture write the special features of peptidoglycan.
- b. Draw the ultra structure of gram negative bacterial flagella .



Department of Botany

Internal examination, B.Sc. Semester 1, 2021

Course Code: BOTACORE02T

FM. 10

Answer any five.

2x5

1. What is Chargaff Law ?
2. Define polynucleotides with structure.
3. What are hn RNA and tRNA?
4. Give the structure of ribose and deoxyribose sugar.
5. What is Z-DNA?
6. Give a brief account of chemical bonds present within DNA molecule.
7. What are purines and pyrimidines? How does a DNA molecule differ from RNA molecule?
8. Write four characters of B-DNA.
9. Elucidate the structure of tRNA.
10. How does a nucleotide differ from nucleoside. Explain with structure.
11. How does the hydrophobic bond work within a DNA molecule?
12. What is gyrase? Give the function.
13. What is topoisomerase?



BARASAT GOVERNMENT COLLEGE
B.Sc. 1st Semester Internal Examination, 2021
BOTACOR02T-BOTANY (CC2)

Time: 1hr

Full Marks: 25

The figures in the margin indicate full marks. Candidates should answer in their own words and adhere to the word limit as practicable. All symbols are of usual significance.

1. Differentiate eukaryotic and prokaryotic cell in respect of nuclear material. (1)
2. Write down the functions of peroxysomes. (3)
3. Briefly discuss the structure of microtubules with suitable diagram. (3)
4. Describe origin of eukaryotes in respect of Endosymbiotic Theory (with diagram). (3)
5. Define MPF and describe the role of Protein Kinase in regulation of Cell Cycle. (3)
6. Why are mitochondria called semiautonomous organelles? (2)
7. What do you understand by glycosylation? Differentiated between O- and N-glycosylation of proteins. (1+2)
8. Schematically represent the route of protein trafficking in eukaryotic cell. (2)
9. What is fluid mosaic model of plasma membrane? (2)
10. What factors determine the fluidity of plasma membrane? (1)
11. What is lignin? What is the purpose of cell wall lignification? (2)



BARASAT GOVERNMENT COLLEGE
BOTANY B.Sc 2ND SEMESTER ONLINE CLASS TEST– 2021
ARCHEGONIATE – PTERIDOPHYTES

Course Code : BOTACOR04T

Internal Evaluation

DATE: 19/06/2021

F.M. =10

Answer **any five** questions from the following

5x2=10

1. Compare *Rhynia* with *Cooksonia*.
2. Comment on the stelar structure of *Rhynia*. Mention its significance.
3. Mention different affinities of *Psilotum*.
4. Discuss on the reproductive structures of *Equisetum*.
5. What is incipient heterospory? Explain.
6. With labeled diagram discuss the stelar structure of *Equisetum*.
7. Distinguish valecular canals with carinal canals.

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BARASAT GOVERNMENT COLLEGE

BOTANY B.Sc 2ND SEMESTER ONLINE CLASS TEST– 2021

ARCHEGONIATE – PTERIDOPHYTES

Course Code : BOTACOR04P

PRACTICAL TEST PAPER

Time allowed: 1 hour

DATE: 14/08/2021

F.M. =10

Answer **any five** questions from the following

5x2=10

1. Draw and label the vertical section of sorus of *Pteris*.
2. Describe in salient points transverse section through synangium of *Psilotum*.
3. Draw and label the transverse section of internode of *Equisetum*.
4. Draw and label the reproductive structures of *Equisetum*.
5. Describe in salient points the longitudinal section through the strobilus of *Selaginella*.
6. Draw and discuss (briefly) the habit and morphology of *Selaginella*
7. Draw and label the whole mount of the microsporophyll and megasporophyll of *Selaginella*.

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DSM/BGC/2nd Sem/2021



BARASAT GOVERNMENT COLLEGE
B.Sc. III rd Semester Internal Examination, 2021

20/12/2021

Test 1

BOTACOR07T-BOTANY (CC7)

Time: 1hr

Full Marks: 25

The figures in the margin indicate full marks. Candidates should answer in their own words and adhere to the word limit as practicable. All symbols are of usual significance.

1. Define Hardy-Weinberg Law mentioning the equation. (2)
 2. Define Genetic Drift and Speciation. (2)
 3. Define the following. (1x3=3)
 - a) Pseudodominance
 - b) Paracentric inversion
 - c) Amphidiploid
 4. What is secondary trisomy? Draw the various metaphase configurations found in secondary trisomy. (1+2=3)
 5. Answer the following questions:-
 - a) What is mutagen? Give one example. (1)
 - b) What is transversion? (1)
 6. What are alkylating agents? Explain Tautomeric shifts in context of molecular basis of Mutation. (2+1=3)
 7. Differentiate between incomplete dominance and codominance with proper example. (3)
 8. What is pleiotropy? Give an example. (2)
 9. Why three factor cross gives better result in compared to two factor cross in linkage mapping? Write down the relationship between recombination frequency and distance between genes. (2)
- or, A and B genes located on human chromosome 2 and chromosome 11 respectively. Comment on the probable degree of linkage and independence of two genes.
10. Define linkage, epistasis and crossing over. (3)

Or, Explain the terms dominance, penetrance and expressivity.

******Submit your answer at mihir.halder@bgc.ac.in within 30 mins of uploading time after the examination duration.**



BARASAT GOVERNMENT COLLEGE

P.G.DEPARTMENT OF BOTANY

INTERNAL EXAMINATION 2021

UG BOTA-SEM-IV

PAPER-BOTACOR08T

Time 1.30 hr

Total Marks- 25

1. What is RNA Priming? (1)
2. What was the conclusion drawn in Fraenkel-Conrat's experiment? (1)
3. Define klenow fragment. What do you mean by rolling circle mechanism of DNA replication? (1+2)
4. How does Hershey & Chase's experiment differs from Avery, McLeod & McCarty's experiment? (1+2)
5. What is a consensus sequence? (1)
6. In what ways does the transcription process differ in eukaryotes and prokaryotes? (2)
7. Why tryptophan operon is regarded as a repressible operon? what is attenuation? 1+1
8. What is gene silencing? Mention the roles played by dicer and RISC in post transcriptional gene silencing process. (1+2=3)
9. What different types of chemical bonds are found in DNA and where are they found? 2
10. What is melting temperature (T_m) of DNA? T_m value of Organism "A" and organism "B" genome are 80°C and 95°C respectively. On the basis of T_m value, comment on DNA structure of A and B organisms. 1+1
11. What is hyperchromic shift? Mention the factors that control the amount of renaturation. 1+2
12. What is facultative heterochromatin and LINES? 3





BARAST GOVERNMENT COLLEGE
DEPARTMENT OF BOTANY
CLASS TEST
Core Course: PLANT PHYSIOLOGY
Course Code: **BOTACOR12T**

Time: 1 hour

Date: 25/02/2021

F.M. 10

*Answer any **five** of the following questions briefly 5X2 = 10*

1. What are chelating agents? How they facilitate nutrient uptake in plants?
2. Write in salient points the role of sulfur in plants. Mention the deficiencies which may develop due its unavailability.
3. With labeled diagram write briefly on nutrient film growth system?
4. Distinguish between hydroponic and aeroponic systems for growing plants in nutrient solutions.
5. What do you understand by source-sink relation in plants? Explain.
6. What is phloem loading? Add diagram to your answer.
7. Write in salient points the significance of auxin in plants.



BARASAT GOVT.COLLEGE
P.G.DEPARTMENT OF BOTANY
SEM-V-INTERNAL EXAMINATION 2021
BOTGDSE01T

FULL MARKS-20

TIME-1HR

1. What is Chargaff's rules?(2)
2. Write down difference between nucleotide and nucleoside (2)
3. Two strand of DNA is anti parallel-explain it. (2)
4. Write down difference between A-DNA and Z-DNA (2)
5. If you used isotopes of P and S in two different medium of bacteriophage.
Radioactivity will be observed in which part of bacteriophage in each case and why?
(2)
6. How do mitochondria generate ATP? (2)
7. What are the components of the nuclear pore complex? What is its function?(2)
8. What are the morphological and functional similarities and differences between
Lysosomes And Peroxisomes?(2)
9. What are LSC and SSC? What do mean by quantasome?(2)
10. Write the full form of RER and SER? What do mean by cortical granular
component?(2)



QUESTIONS FOR INTERNAL EXAMINATION 2021

UG BOTA-SEM-VI

PAPER-BOTADSE03T

Time 1.30 hr

Total Marks- 25

1. State the working principle of confocal microscope. 2
2. What is R.C.F? State the relationship between R.C.F and rpm? (1+1=2)
3. How polyacrylamide gels are formed? State the advantages and disadvantages of agarose gels. (1+1=2)
4. Distinguish between optical microscope and electron microscope. 2
5. Write two main differences between Gas Chromatography and Column Chromatography. 2
6. Write the advantages of TLC over Paper Chromatography. 2
7. What is flurochrome? Name two flurochrome dyes. How they work? (1+2+1)
8. What do you mean by rate zonal density gradient centrifugation? Mention the basic principle of sucrose gradient centrifugation. (1+1=2)
9. Diagrammatically represent the steps of autoradiography. 2
10. How SEM and TEM are differs from each other? 2
11. With examples define carrier gas. Where it is used? 2
12. What is resolution of microscope? 1



BARAST GOVERNMENT COLLEGE
DEPARTMENT OF BOTANY
INTERNAL EVALUATION
Core Course: PLANT PHYSIOLOGY
Course Code: BOTACOR13T

Time: 1 hour

Date: 21/06/2021

F.M. 10

*Answer any **five** of the following questions briefly* 5X2 = 10

1. With labeled diagram discuss the flow of electrons in Q cycle?
2. What is the significance of Q cycle?
3. Elucidate non-cyclic photophosphorylation.
4. Describe dual mode of RubisCO.
5. What is Hill reaction where does it take place what are the products?
6. How regeneration of Ribulose 1,5 bis phosphate takes place in Calvin-Benson-Bassham cycle?
7. Mention the steps of carbon reduction as it takes place in Calvin-Benson-Bassham cycle?



BARASAT GOVERNMENT COLLEGE

INTERNAL EXAMINATION 2021

UG BOTA-SEM-VI

PAPER-BOTACOR14T

Total Marks- 25

Time- 1.30 hr

1. Name the parasporal crystal responsible for pest resistant. 1
2. What do you mean by Roundup Ready crops? 1
3. What do you mean by non selective herbicide? Give one example of it and mention how does it affect plant metabolic pathway? 1+2
4. Mention the protein product of cry1 gene and its subsequent mode of action. 3
5. How does a somatic embryo differ from a zygotic embryo? Mention the advantages of somatic embryogenesis over organogenesis. 1+1=2
6. What is micropropagation? Mention the different stages involved in the micro propagation process. 2
7. What is an osmoticum? Why the addition of sucrose is necessary in plant tissue culture medium? 1+1=2
8. What is totipotency? State the importance of totipotency in plants. 1+1=2
9. The data of Single digestion and double digestion of a circular plasmid with Restriction endonuclease of X and Y were given in below. 3

Restriction endonuclease	Size of fragments produced
X	20kb, 10kb, 5kb
Y	8kb, 7kb, 10kb, 6kb, 4kb,
X+Y	6kb, 4kb, 8kb, 7kb, 3kb, 7kb

Based on this data draw the restriction map.

10. Distinguish between TYPE II and TYPE III Restriction endonuclease. 3
11. Briefly discuss the Characteristic features of an effective cloning vector. What is shuttle vector? 2+1



BARASAT GOVT.COLLEGE
P.G.DEPARTMENT OF BOTANY
SEM-VI-INTERNAL EXAMINATION 2022
BOTADSE05T

Full Marks-25

Time-1Hr

1. Answer the following:

- a. What is PAM? (2)
- b. What do mean by Dynamic programming? (2)
- c. Define HMM. (2)
- d. What is a Dendogram?(2)
- e. What are MSA?(2)
- f. What is CADD? (2)
- g. Define QSAR.(1)
- h. What is Druggable Genome?(2)

2. Answer the following:

- a. What is monophyly and paraphyly? Differentiate between Maximum Parsimony and Maximum Likelihood.(2+3)
- b. Explain in brief about SBDD. Mention the steps in drug discovery.(2+3)



BARASAT GOVERNMENT COLLEGE

P.G.DEPARTMENT OF BOTANY

INTERNAL EXAMINATION 2021

Bioinformatics

COURSE CODE: BOTADSE05T

TIME-1HOUR

FULL MARKS-20

1. Answer the following Questions:-

- | | |
|---|---|
| a) What is genome annotation? | 2 |
| b) What do you mean by Personalized medicine? | 2 |
| c) What is the difference between file system and DBMS? | 2 |
| d) What is the full form of TREMBL, DDBJ, PIR and NRDB? | 2 |
| e) Mention the major components of NCBI. | 2 |

2. What are biological databases? Mention data domains. Classify Biological databases.

(1+2+2)

3. What do you mean by HSP? Mention where it is used profusely and classify that

algorithm for comparing primary biological sequence information. (1+1+3)



BOTGDSE04T-DSE 2

Analytical techniques in plant science

1. Answer the following questions (any ten) 10x1= 10
- a. Name any two Fluorescent Dyes.
 - b. Mention the working principle of Confocal Microscopy.
 - c. Define Cryofixation.
 - d. Name the types of Banding you have studied.
 - e. Which physical property is used in column chromatography?
 - f. What is degree of freedom?
 - g. Write down the significance of chi-square analysis.
 - h. Write any two units of radioactivity.
 - i. What is Rf value in chromatography?
 - j. Write two uses of radioisotopes in biology.
 - k. Mention the use of ninhydrin solution in separation of amino acid through chromatography.
 - l. What is the preferred solvent system for amino acid separation through chromatography?
 - m. Which radioisotope is generally used to label DNA in laboratory?
 - n. Calculate the median from the following data: 200, 200, 10, 300, 800, 50, 500, 250, and 350.

2. Answer any five questions from the following 3x5 = 15
- a. Differentiate Scanning Electron Microscopy and Transmission Electron Microscopy.
 - b. Describe properly the steps of Freeze-Etching and Shadow-Casting Technique
 - c. How will you account for the Rf value always being less than one?
 - d. Selfing of a hybrid plant produced a population with 88 pink flowers and 32 white flowers. Calculate goodness of fit from the above data.
 - e. Compare alpha, beta and gamma radiations.
 - f. Diagrammatically show different steps of autoradiography.
 - g. Discuss about TLC and Paper Chromatography.
 - h. What is spectrophotometry and mention its application?
 - i. How primary data differs from secondary data? Write the advantage of primary data over secondary data. 2+1
 - j. Calculate the arithmetic mean, mode and median for given data.

Family monthly income (Rs.)	45000	5000	10000	25000	15000	30000	20000
Frequency of family	1	4	6	5	10	4	2



BARASAT GOVT COLLEGE
INTERNAL EXAMINATION 2022
DEPART OF BOTANY
B.Sc. SEM I
BOTACOR01T- BOTANY (CC1)

Time 1h

Marks 25

1. Answer the following Questions 1X5=5
- a) Name algae (Scientific name) where daughter colony is found?
 - b) Mention the storage product of Phaeophyta.
 - c) Name the male and female sex organs of *Chara*?
 - d) Name one symbiotic algae.
 - e) Mention the main pigment of Rhodophyta.
2. Answer any five 3X5=15
- a) What is Nannandrium? How does it produce? 1+2=3
 - b) State the diagnostic characters of Xanthophyta. 3
 - c) Where do you find apical cap? How does it produce? 1+2=3
 - d) What is synzoospore? How does it produce? 1+2=3
 - e) What do you mean by alteration of generation? How many types of life cycles are found in algae and mention their name only? 1+1+1=3
 - f) Mention the differences between Carposporophyte and Tetrasporophyte. (1¹/₂×2)=3
3. Answer any one 1x5=5
- a. What is algin? Name one edible alga (scientific name). Write short notes on toxic algae. 1+1+3=5
 - b. Describe the process of asexual and sexual reproduction of *Ectocarpus* 2¹/₂+2¹/₂=5
-



BARASAT GOVERNMENT COLLEGE

INTERNAL EXAMINATION-2022

BSc. SEMESTER-III

CORE COURSE-BOTACOR06T

ECONOMIC BOTANY

DATE-23.12.2022

FULL MARKS-20

1. Answer the following: -

- a. State the Origin, Morphology, Scientific name and uses of Chick pea and its importance to man and ecosystem. (2+2+2+2+2=10).

OR

- b. State the Origin, Morphology, Scientific name and uses of Pigeon pea and its importance to man and ecosystem. (2+2+2+2+2=10).

2. Answer the following: -

- a. Write the family and parts used of Fennel and Black pepper. (2+2+2+2=8)
- b. Describe the economic importance of Clove and saffron.(2)

OR

- a. Write the active constituents and health hazards of *Cinchona* and *Cannabis*.(4+4=8)
- b. Write the scientific name and family of Tobacco.(2)



BARASAT GOVERNMENT COLLEGE

INTERNAL EXAMINATION-2022

BSc. SEMESTER-III

CORE COURSE-BOTACOR07T

GENETICS

DATE-21.12.2022

FULL MARKS-20

1. Answer any five: -

5X2=10

- a. What are mutagens? Name one physical mutagen and a chemical mutagen.
- b. What are base analogues, give one example.
- c. What is base pair substitution?
- d. Give an example of nonsense mutation. What is forward mutation?
- e. What is tautomerization?
- f. Who coined the term mutation? Mention its types.

2. Answer any two: -

2 X 5=10

- a. What are alkylating agents? Describe their mode of action in brief. (2+3=5)
- b. Mention the major types of DNA mechanism. How does mismatch repair differs from Base excision repair? (2+3=5)
- c. Describe SOS Repair in brief. (5)



BARAST GOVERNMENT COLLEGE
DEPARTMENT OF BOTANY
CLASS TEST
Core Course: PLANT PHYSIOLOGY
Course Code: **BOTACOR12T**

Time: 1 hour

Date: 11/01/2022

F.M. 10

*Answer any **five** of the following questions briefly*

5X2 = 10

1. Explain why soil can be called as the reservoir of nutrients.
2. Write in salient points on different theories of transpiration.
3. Discuss the role of light, potassium and ABA in the stomatal movement.
4. Compare with examples passive, facilitated and active absorption in plants.
5. Compare working principles of channels versus pumps present in the plasma membranes.
6. Define water potential. Explain briefly various components of water potential.
7. Explain ascent of sap in the light of cohesion-tension theory.



INTERNAL ASSESSMENT 2022
UG-SEMESTER-V
BOTADSE03T
INDUSTRIAL MICROBIOLOGY

FM:20

Time-1h

- 1. Answer any eight questions** **1x8=8**
- a. Name one fermented dairy product.
 - b. What is secondary metabolite?
 - c. Name one antifoam agent.
 - d. Name two functions of amylase.
 - e. What do you mean by downstream processing?
 - f. What is pilot scale fermenter?
 - g. Write the function of lyophilizer?
 - h. Name a product of solid state fermentation.
 - i. Name one instrument to disrupt microbial cells.
 - j. Name one enzyme which can break fungal cells.
 - k. What is salting out of protein?
 - l. What is upstream processing?
- 2. Answer any four questions** **3x4=12**
- a. Write the properties of an ideal industrial strain.
 - b. Give a flow chart for purification of an intracellular/extracellular enzyme.
 - c. Mention different types of Amylases based on their mode of action with the producer organisms.
 - d. Draw a fermenter and label different parts of it.
 - e. Write the importance of medium in fermentation.
 - f. Draw the growth curves of batch and continuous fermentations. What is diauxic growth?



Barasat Government College

Internal Examinations-2022

Sem-VI DSE-4

FM: 20

Time 1h

1. Answer any 5 from the following : $1 \times 5 = 5$
 - a) Name one carrier gas.
 - b) The half life of ^{32}P is 14.2 days. What does it mean?
 - c) Name one unit to measure the radioactivity
 - d) What is the principle of size exclusion chromatography.
 - e) What is R_f ?
 - f) What is the full form of HPTLC
 - g) What is dpm?

2. Answer any 5 questions : $5 \times 3 = 15$
 - a) Differentiate α , β and γ radiations.
 - b) Write a short note on Autoradiography.
 - c) Write the advantages of TLC over Paper chromatography.
 - d) Write the principle of HPLC. Draw a graph to show the relationship of theoretical plates and the shape of the analyte peak.
 - e) Write a short note on affinity chromatography.
 - f) With Diagram write a note on GLC. Which type of compounds are separated in GLC?



BARASAT GOVT.COLLEGE
P.G.DEPARTMENT OF BOTANY
SEM-VI-INTERNAL EXAMINATION 2022
BOTADSE05T

Full Marks-20

Time-1Hr

1. Answer the following:

- a. What is PIR? (2)
- b. What is Structural Genomics? (2)
- c. Define DBMS. (2)
- d. What is Schema?(2)
- e. Write the Full form of DDBJ and EMBL.(2)

2. Answer the following:

- a. What are Biological Databases? Mention its classification in brief.(2+3)
- b. What is Fasta and Data domain? State the difference between file system and DBMS.(2+3)



BARASAT GOVT COLLEGE
INTERNAL EXAMINATION 2023
DEPART OF BOTANY
B.Sc. SEM I
DS-1T
(Microbiology and Phycology)

Full Marks 25

Time 1h

1. Answer any Six questions

1X6

- a) Who proposed the three-domain system.
- b) Cite one Example of colonial alga.
- c) What do you mean by obligate saprophyte?
- d) Mention the reserve food material of Phaeophyceae.
- e) What do you mean by Phycology?
- f) What is the difference between pili and flagella.
- g) What is dwarf male filament
- h) Name one contribution of Pasteur.
- i) Name one antibiotic producing bacteria and name the antibiotic.
- j) What do you mean by 'F'?

2. Answer any three questions:

3x3=9

- a) Draw the labelled ultra structure of flagella.

2+1

OR

Differentiate lytic cycle with lysogenic cycle of bacteriophage.

3

- b) Mention salient features of Cyanophyceae and Rhodophyceae

1¹/₂X2

OR Write a note on Archaea.

3

- c) What is synzoospore? How does it produce?

1+2

OR

Write short notes on zoospore or apical cap formation of *Oedogonium*.

2+1

3. Answer any two

5x2=10

- a) Write a note on Hfr x F⁻ conjugation.

OR

Draw the structure of Peptidoglycan.

- b) How many types of life cycle pattern are found in algae? Write about them

1+4

OR

Describe the structure of Globule of *Chara*

4+1



B.Sc. Honours/Programme 4th Semester Examination 2023

BOTGCOR04T-BOTANY (GE4/DSC4)

Answer the following(Any eight)

1x8

1. Define water potential.
2. Define osmosis?
3. What are the components of water potential?
4. What is solute potential?
5. What is apical dominance?
6. Define macro and microelement?
7. What is chlorosis?
8. Name the precursor molecule for ethylene biosynthesis.
9. Name one synthetic cytokinin.
10. What is florigen?

Answer the following (Any four)

3x4

1. What do you understand by phloem loading?
2. What is the composition of phloem sap? What do you mean by transpiration pull.
3. Write and account of the role of water in driving various physiological processes in plants.
4. State acid growth hypothesis in relation to auxin in plant cells.
5. With suitable diagram describe the role of GA in seed germination.
6. Describe the nitrogen deficiency symptoms in plants.
7. What are the significant roles of Phosphorus in plant system?
8. What is Richmond-Lang effect? Name the name of the hormone concerned.

Answer the following (Any one)

1x5

1. Write the role of water in driving various physiological processes in plants.
2. Explain stomatal closure in plant in relation to ABA accumulation during scarcity of water.
3. State the deficiency symptoms of Calcium, Potassium and Cobalt.



Barasat Government College, PG Department of Botany
B.Sc. Honours CBCS Examination SEM V
Internal Examination 2023-24
Paper Code: BOTACOR12T
(Plant Physiology)

Time: 1 hour

F.M. 25

The figures in the margin indicate full marks. Candidates should answer in their own words and adhere to the word limit as practicable. All symbols are of usual significance.

1. Answer **any five** of the following questions briefly 5x1= 5
 - (i) Name a plant hormone used as weedicide (IUPAC name).
 - (ii) What is the precursor molecule for ethylene biosynthesis?
 - (iii) Name one natural auxin and antiauxin.
 - (iv) Name the most abundantly obtained natural kinetin.
 - (v) Name the fungus from which GA was first discovered.
 - (vi) Write two functions of phosphorus in plants?
 - (vii) Define micronutrients with example?
 - (viii) Define water potential. What is its unit?
 - (ix) What are the two criteria for knowing essentiality of elements in plants?
2. Answer **any five** of the following questions 3x5=15
 - (i) Briefly discuss apical dominance.
 - (ii) Discuss on climacteric and non-climacteric fruits.
 - (iii) Schematically represent Cytokinin signalling in plants.
 - (iv) Diagrammatically represent auxin biosynthesis.
 - (v) What are antitranspirants? Explain the factors governing transpiration in plants?
 - (vi) Distinguish between transpiration and guttation.
 - (vii) Briefly explain the role Ca^{2+} ions on stomatal movement?
 - (viii) What is cohesion-tension theory of ascent of sap in plants?
3. Answer **any one** of the following 5x1
 - (i) Schematically represent role of GA in seed germination.
 - (ii) Acid growth hypothesis of Auxin.
 - (iii) Explain the mechanism of stomatal opening (modern theory) in plants with labeled diagram.

.....



Barasat Government College, PG Department of Botany
B.Sc. Honours CBCS Examination SEM V
Internal Examination II (2023-24)
Paper Code: BOTACOR12T
(Plant Physiology)

Time: 1 hour

F.M. 25

The figures in the margin indicate full marks. Candidates should answer in their own words and adhere to the word limit as practicable. All symbols are of usual significance.

1. Answer **any five** of the following questions briefly 5x1= 5
- (i) What is vernalin?
 - (ii) Define photoperiodism.
 - (iii) What is scarification?
 - (iv) What is stratification and after ripening?
 - (v) Differentiate pump versus channels.
 - (vi) What is NPA domain? Where is it situated?
 - (vii) How active absorption is different from passive absorption?
 - (viii) What is the use of different of nutrient systems in plant physiology?
 - (ix) Mention the factors affecting diffusion in plants.
2. Answer **any five** of the following questions 3x5=15
- (i) Write a note on factors affecting seed germination.
 - (ii) Write about different types of dormancy.
 - (iii) Categorise flowering of plants based on photoperiodism.
 - (iv) What is critical day length? Experimentally show effect of long day, short day and night break on flowering.
 - (v) Compare Hydroponic, aeroponic and ebb and flow nutrient system.
 - (vi) With labeled diagram and salient points discuss briefly action of aquaporins.
 - (vii) Compare uniport, symport and antiport system of ion transport
 - (viii) Compare apoplastic, symplastic and transmembrane pathways in plants.
3. Answer any one of the following 5x1
- (i) Write a short note on the Florigen concept.
 - (ii) Give a brief account on nutrient mobilization during germination.
 - (iii) With labeled diagram discuss working of H⁺ ATPase pumps? State their function?



B.Sc 6th Semester Botany (Hons), 2023
Paper Code: BOTACOR13T
Plant Metabolism

Date of Test: 01/06/2023

F.M. = 25

1. Answer the following questions

8X1= 8

- a) What is oleosome?
- b) What is the function of glyoxysome in plant cell?
- c) In which type of enzyme and inhibitor reaction K_m value changes but V_{max} remains unchanged?
- d) Define mixed inhibition.
- e) State one beneficial aspect of photorespiration?
- f) Why carotenoids are called accessory pigments?
- g) Why photorespiration is termed as C-2 cycle?
- h) Why DCMU cannot inhibit cyclic photophosphorylation?

2. Answer any four from the following questions

4X3=12

- a) Describe glyoxylate cycle.
- b) Explain positive and negative cooperativity with graph.
- c) Write the significance of carnitine molecule in beta oxidation of fatty acid.
- d) Explain non-competitive inhibition in enzymatic reaction with graph.
- e) Distinguish action spectrum and absorption spectrum.
- f) Explain dual action of RubisCO enzyme.
- g) Distinguish between non cyclic photophosphorylation and cyclic photophosphorylation.
- h) Photosynthesis is an oxidoreductive process. Explain.

3. Answer any one from the following questions

- a) Explain the pathway of beta oxidation of palmitic acid. What are the end products?
 - b) With labelled diagram explain photorespiration giving names of relevant enzymes in each step.
 - c) How regeneration of Ribulose 1,5 bis phosphate takes place in Calvin cycle, explain giving relevant steps.
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B.Sc 6th Semester Botany (Hons), 2023
Paper Code: BOTACOR13T
Plant Metabolism

Date of Test: 03/05/2023

F.M. = 25

1. Answer the following questions

8X1= 8

- a) What type of enzyme inhibitor is that which has different V_{max} and K_m ?
- b) What is feedback inhibition?
- c) Define zymogen.
- d) Define mixed inhibition.
- e) Why DCMU is used as herbicide?
- f) What is funnelling effect?
- g) Name the copper containing electron carrier of non-cyclic electron flow.
- h) What is the function of ferredoxin NADP reductase?

2. Answer any four from the following questions

4X3=12

- a) Explain in brief competitive inhibition.
- b) Differentiate between non competitive and uncompetitive inhibition with graphical representations.
- c) What is allosteric regulation of enzyme, cite an example.
- d) Explain and graphically represent the cooperativity during enzymatic reactions.
- e) Distinguish between principal pigments and accessory pigments.
- f) Describe supramolecular structure of PS-II mentioning different protein compositions.
- g) Distinguish between PS-II and PS-I in salient points.
- h) Why chlorophyll is not soluble in water but soluble in organic solvents? What is the absorption peak of chlorophyll-a?

3. Answer any one from the following questions

- a) Write a brief note on isozyme.
- b) What is photolysis of water? With labelled flow chart explain Z-scheme of electron flow.
- c) Explain Q-cycle of the photosynthetic light reactions. Mention its significance.



B.Sc 6th Semester Botany (Hons), 2024
Paper Code: BOTACOR13T
Plant Metabolism

Date of Test: 13/05/2024

F.M. = 25

1. Answer the following questions

8x1= 8

- a) What is isozyme?
- b) Define zymogen with example
- c) Define secondary messenger.
- d) What is MAPK?
- e) What is PCK type of C4 pathway?
- f) If 18 molecules of carbon dioxide are fixed in by RubisCO in C3 cycle then how many hexose sugars will be gained and how many molecules of Ribulose 1, 5 bis phosphate will be regenerated?
- g) Define Kranz anatomy?
- h) What are uncouplers of Z-scheme of electron transport? Give example?

2. Answer any four from the following questions

4X3=12

- a) Define Calmodulin in signal transduction. State the significance.
- b) Write a short note on GPCR based signal transduction with example.
- c) How photorespiration is associated with amino acid metabolism?
- d) Difference between uncompetitive and non-competitive inhibition of enzyme reaction.
- e) Explain Q cycle with diagram?
- f) State in points how regeneration of Ribulose 1, 5 bis phosphate takes place in Calvin cycle?
- g) Distinguish between C3 and C4 type of carbon dioxide assimilation in plants?
- h) Photosynthesis is an oxido-reductive process. Explain.

3. Answer any one from the following questions

5x1 = 5

- a) Explain allosteric regulation of enzymes?
- b) Discuss calcium mediated signal transduction?
- c) With labelled diagram explain photorespiration giving names of relevant enzymes in each step.
- d) Write an account of the different factors affecting photosynthesis.

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