

**SH-IV/Botany-401C-8/19****B.Sc. 4th Semester (Honours) Examination, 2019****BOTANY****(Molecular Biology)****Paper : 401/C-8****Course ID : 41311****Time: 1 Hour 15 Minutes****Full Marks: 25**

*The figures in the margin indicate full marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

1. Answer *any five* of the following: 1×5=5
- To which end of a newly synthesized strand of DNA does polymerase add a base?
  - What enzymes take part in joining the fragments of lagging strand?
  - In which direction along the template strand does transcription occur?
  - What is guide RNA?
  - What is the function of sigma ( $\sigma$ ) sub-unit of RNA polymerase in DNA transcription?
  - How transcription of 'trp' operon is attenuated when tryptophan level is high?
  - What is phosphodiester bond?
  - What do you mean by met-tRNA<sup>fmet</sup>?
2. Answer *any two* of the following: 5×2=10
- Prove that 'DNA is the genetic material' by Harshey and Chase experiment.
  - Describe the structure of typical tRNA giving emphasis to anticodon loop.
  - How are the introns spliced out from heterogeneous nuclear-RNA? Mention proposed biological role of Poly A tail. 4+1=5
  - What is codon degeneracy? How do codon degeneracy help to neutralise point mutations? 2+3=5
3. Answer *any one* of the following: 10×1=10
- Describe the negative regulation of lactose metabolism in bacteria with suitable diagram.  
Comment on expression of 'Lac operon' as 'on' or 'off' when
    - Glucose present, lactose absent,
    - Glucose absent, lactose present. 8+2=10
  - Describe the initiation process of protein synthesis with suitable diagram. Name two inhibitors which inhibit protein synthesis in prokaryote. 8+2=10

**SH-IV/Botany/401/C-8(PR)/19**

**B.Sc. 4th Semester (Honours) Practical Examination, 2019**

**BOTANY**

**(Molecular Biology)**

**Paper : 401/C-8**

**Course ID : 41321**

**Time: 2 Hours**

**Full Marks: 15**

*The figures in the margin indicate full marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

1. Prepare a standard curve of DNA (Sample A) by using DPA method. From the curve find out the unknown concentration of the given sample. (A<sub>1</sub>).  
[Principle 2, Calculations, result and graph-3 Comment-2] 2+3+2=7
  2. Comment on supplied photographic document 'B' and 'C'. 1½×2=3
  3. Viva voce 3
  4. Practical records 2
-

**B.Sc. 4th Semester (Honours) Practical Examination, 2019**

**BOTANY**

**(Molecular Biology)**

**Paper : 401C-8**

**Course ID : 41321**

*Instruction to the Examiners*

1. Not more than 20 examinees should be taken in a batch.
2. Materials should be changed for each batch.
3. 'Key' to the materials supplied should be submitted along with the examined answer scripts to the Controller of Examinations. BKU within 7 days after the completion of examinations.
4. For Questions No.1, a stock solution of known concentration, (usually 1000 µg/ml) of DNA (sample-A) along with reagents for the respective estimation should be supplied to the candidates. For making the standard curve a range of different dilutions should be mentioned and the unknown concentrations should be within the range of the dilutions used for making standard curve. All the requirements for this experiment should be provided to the candidates.
5. For Question No.2: Photocopies of following documents from syllabus should be given to the candidates for comments (Rolling Circle Model, of  $\theta$  (Theta) Replication, Messelson and Stahl's experiment, Hershey -Chase expt, Avery et al expt., Frankel and Conrat's expt., Alternative splicing)
6. Proportionate marks should be deducted from the examinees who do not have regular signature of teachers in that laboratory notebook with dates.
7. Viva voce should be conducted in presence of more than one examiner.
8. Examined scripts should be arranged according to the top sheet provided by the university.
9. Full name, specimen signature and address (With mobile No.) of the examiners should be given along with 'key' to the materials submitted.

**SH-IV/Botany/402/C9/19**

**B.Sc. 4th Semester (Honours) Examination, 2019**

**BOTANY**

**(Plant Ecology and Phytogeography)**

**Paper : 402/C-9**

**Course ID : 41312**

**Time: 1 Hour 15 Minutes**

**Full Marks: 25**

*The figures in the right hand side margin indicate full marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

1. Answer *any five* questions from the following: 1×5=5
- (a) Differentiate between grazing and detritous food chain.
  - (b) What is hekistotherm?
  - (c) What is ecotone?
  - (d) Distinguish between autecology and synecology.
  - (e) What is ecesis?
  - (f) Name two endemic plant species from Eastern Himalayan region.
  - (g) What is allogenic succession?
  - (h) Name any two biological hotspots of India.
2. Answer *any two* questions from the following: 5×2=10
- (a) What is commensalism? Explain with suitable example of an Inverted Pyramid. 2+3=5
  - (b) Differentiate heliophyte and sciophyte. What is ecological amplitude? 3+2=5
  - (c) What is endemism? Briefly mention two theories regarding endemism. 1+4=5
  - (d) What is sere? Briefly describe the different stages of succession in xerosere. 1+4=5
3. Answer *any one* question from the following: 10×1=10
- (a) What is biogeochemical cycle? Briefly describe with suitable cyclic representation of phosphorus cycle in the nature. 2+8=10
  - (b) Describe a model of energy flow in an ecosystem. What is biome? 8+2=10
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**SH-IV/Botany/402/C9(PR)/19**

**B.Sc. 4th Semester (Honours) Practical Examination, 2019**

**BOTANY**

**(Plant Ecology & Phytogeography)**

**Paper : 402/C9**

**Course ID : 41322**

**Time: 2 Hours**

**Full Marks: 15**

*The figures in the margin indicate full marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

1. Make a neat temporary anatomical slide preparation of the supplied material — ‘A’ and draw labelled sketch. Comment on the adaptive anatomical features observed. 7  
(Preparation — 2, Drawing — 2, Labelling — 1, Comment — 2)
  2. Determine the pH of the given sample — ‘B’ 3  
(Procedure — 2, Comment on result — 1)
  3. Laboratory Notebooks 2
  4. Ecological Field Visits 1
  4. Viva voce 2
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**B.Sc. 4th Semester (Honours) Practical Examination, 2019**

**BOTANY**

**(Plant Ecology & Phytogeography)**

**Paper : 401/C9**

**Course ID : 41322**

**Instruction to the Examiners**

1. Material 'A' to be given from the prescribed syllabus i.e.
    - (i) Stem of *Ipomoea quatica*
    - (ii) Phyllode of *Acacia auriculiformis*
    - (iii) Leaf of *Nerium* sp.
    - (iv) Root of *Vanda* sp.
  2. Material 'B' should be taken from various soil or water sample.
  3. Laboratory Notebooks.  
Credit should be given to the candidates whose records are found to be regularly endorsed.
  4. Field Visit  
Credit should be given to the candidates who have visited the different sites for ecological studies.
  5. Viva voce — Should be conducted jointly by more than one examiner.
  6. All preparations, results of experiments and drawing must be endorsed by one of the examiners.
  7. A key to the materials supplied, question-wise and candidate-wise, should be submitted to the conveners along with the answer scripts.
  8. Not more than 20 examinees should be taken in a batch.
  9. Examined scripts and keys should be signed jointly by the examiners.
  10. Internal Examiners are requested to keep ready the materials, reagents and chemicals required for the practical works.
  11. Full names, signature and address of the examiners should be sent to the convener.
  12. Marks should be deducted for spelling mistakes in scientific names.
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**B.Sc. 4th Semester (Honours) Examination, 2019**

**BOTANY**

**(Plant Systematics)**

**Paper : 403/C-10**

**Course ID : 41313**

**Time: 1 Hour 15 Minutes**

**Full Marks: 25**

*The figures in the right hand side margin indicate full marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

1. Answer *any five* of the following: 1×5=5
- (a) Who coined the term 'taxon' in plant science?
  - (b) What is a monograph?
  - (c) What is monophyly?
  - (d) Name one member of scrophulariaceae having regular flower.
  - (e) Write the full form of APG.
  - (f) What is Lectotype?
  - (g) What is clado gram?
  - (h) Write two primitive features of Magnoliaceae.
2. Answer *any two* of the following: 5×2=10
- (a) Discuss the floral construction of Brassicaceae with proper illustrations. 3+2=5
  - (b) Define numerical taxonomy. How is it differ from cladistics? Mention the different operational steps involved in the numerical taxonomy. 2+1+2=5
  - (c) Explain the different situation with proper example for the rejection of a name of a taxon. 3+2=5
  - (d) Point out the diagnostic features of Orchidaceae. Name one climber of this family. 4+1=5
3. Answer *any one* of the following: 10×1=10
- (a) Give a brief outline of Takhtajan's classification (1997) up to sub classes. State its merits. 8+2=10
  - (b) Compare and contrast between the followings: 2½×4=10
    - (i) Apocynaceae vs. Asclepiadaceae
    - (ii) Parallelism vs. Convergence
    - (iii) Alismataceae vs. Liliaceae
    - (iv) Alpha taxonomy vs. Omega taxonomy

*SH-IV/Botany/403/C10/(PR)/19*

**B.Sc. 4th Semester (Honours) Practical Examination, 2019**

**BOTANY**

**(Plant Systematics)**

**Paper : 403/C-10**

**Course ID : 41323**

**Time: 2 Hours**

**Full Marks: 15**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

1. Dissect, draw, label and describe the reproductive structures of the specimen 'A'. Identify the specimen upto genus level citing characters from supplied keys.

(Dissection and display – 1½, Drawing and labelling – 1½, Description –2, Identification of the family and genus citing characters from literature – 2) 7

2. Write the Botanical name and family of the specimen – 'B' and 'C' 1½×2=3

3. Laboratory Notebooks (checked by teacher concerned) 1

4. Herbarium sheets/photographic documentation of angiospermic plants (at least 20) with field records and field report. 2

5. Viva voce 2

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*SH-IV/Botany/403/C10/(PRI)/19***B.Sc. 4th Semester (Honours) Practical Examination, 2019****BOTANY****(Plant Systematics)****Paper : 403/C-10****Course ID : 41323*****INSTRUCTIONS TO THE EXAMINERS***

1. Specimen 'A' : A flowering twig of the plant belonging families, mentioned in the practical syllabus.

Breakup of marks:

Dissection and display of flower	1+½=1½
Drawing and labelling	1+½=1½
Description	2
Citing characters from supplied keys	
Identification of family and genus	1+1=2
Total —	7

2. Specimen 'B' and 'C' selected from the members of the angiospermic families, as prescribed in the syllabus. (one monocot specimen should be given)

Breakup of marks:

$$\left. \begin{array}{l} \text{Family — } \frac{1}{2} \\ \text{Genus — } \frac{1}{2} \\ \text{Species — } \frac{1}{2} \end{array} \right\} 1\frac{1}{2} \times 2 = 3$$

3. Practical Notebook 1  
(should be properly signed and checked by the concerned Teacher)
4. Herbarium specimens/photographic documentation of at least 20 angiospermic plants and field records and field reports. 1+1=2
5. Viva voce 2  
[Viva voce test should be taken in a group of examiners and question should be asked from different disciplines of the subject in which the candidates are being examined.]

**SPECIAL NOTES**

- Not more than 20 examinees should be taken in a batch.
- A perfect key to the working and identification materials in details should be prepared batch-wise and submitted along with the examined answer scripts.
- Internal examiner(s) are requested to keep ready the materials and other requirements for the practical marks.
- Full names and signature and address of examiners should be sent to the convener.

*SH-IV/Botany/404/GE-4/19***B.Sc. 4th Semester (Honours) Examination, 2019****BOTANY****(Plant Physiology and Metabolism)****Paper : 404/GE-4****Course ID : 41314****Time: 1 Hour 15 Minutes****Full Marks: 25***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words  
as far as practicable.**দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।  
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।***1. Answer any five of the following:****1×5=5**

যে কোনো পাঁচটি প্রশ্নের উত্তর দাও :

(a) What are antitranspirants?

বাষ্পমোচন প্রতিরোধী কী?

(b) Write down the full form of RUBISCO.

RUBISCO -এর সম্পূর্ণ নাম লেখো।

(c) What are co-factor of enzyme?

উৎসেচকের কো-ফ্যাক্টর কী?

(d) What do you mean by Biological Nitrogen fixation?

জীবজ নাইট্রোজেন সংবন্ধন বলতে কী বোঝো?

(e) Name two natural plant hormones.

দুটি প্রাকৃতিক উদ্ভিদ হরমোন-এর নাম লেখো।

(f) What do you mean by the term “specificity of enzyme”?

“উৎসেচকের নির্দিষ্টতা” বলতে কী বোঝো?

(g) Name one plant where CAM cycle occurs.

CAM চক্র সংঘটিত হয় এমন একটি উদ্ভিদের নাম লেখো।

(h) What is R.Q.?

শ্বাস অনুপাত (R.Q.) কী?

2. Answer *any two* questions from the following: 5×2=10

নিম্নলিখিত যে কোনো দুটি প্রশ্নের উত্তর দাও :

(a) What is enzyme? Describe the properties of enzyme. 2+3=5  
উৎসেচক কাকে বলে? উৎসেচকের বিভিন্ন ধর্মের বর্ণনা দাও।

(b) What is Transpiration? Describe different factors affecting the transpiration.  
বাস্পমোচন কাকে বলে? বাস্পমোচনের বিভিন্ন প্রভাবকগুলি বর্ণনা করো।

(c) Why krebs cycle is called TCA cycle? What is the site of its occurrence? Mention the reactions responsible for liberation of CO<sub>2</sub> in krebs cycle. How many ATPs are produced from one molecule of Pyruvic acid oxidized? 1+1+2+1=5  
ক্রেবস চক্রকে TCA চক্র বলা হয় কেন? এটি কোশের কোথায় ঘটে? কেবস চক্রের কোন কোন বিক্রিয়াগুলিতে CO<sub>2</sub> নির্গত হয়? এক অনু পাইরুভিক অ্যাসিড জারিত হলে কয়টি ATP উৎপন্ন হয়?

(d) Describe the physiological role of Auxin in plant. 5  
অক্সিন উদ্ভিদ হরমোন -এর কাজ বা শারীরবৃত্তীয় গুরুত্ব উল্লেখ করো।

3. Answer *any one* question from the following: 10×1=10

নিম্নলিখিত যে কোনো একটি প্রশ্নের উত্তর দাও :

(a) Describe the dark reaction of photosynthesis. What is Hill reaction? 8+2=10  
সালোকসংশ্লেষের অন্ধকার বিক্রিয়া বা হিল বিক্রিয়া কী?

(b) Define photoperiodism. What are long day, short day and day neutral plants? Give examples. Name the pigments participating flowering. Give short account of vernalization. 1+(1½×3)+½+4=10

আলোক পর্যাবৃত্তির সংজ্ঞা দাও। দীর্ঘ-দিবা, হ্রস্ব দিবা ও দিবা-নিরপেক্ষ উদ্ভিদ কাদের বলে? উদাহরণ দাও। পুষ্প প্রস্ফুটনে অংশগ্রহণকারী রঞ্জকের নাম লেখো। বাসন্তীকরণের সংক্ষিপ্ত বর্ণনা দাও।

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SH-IV/Botany/405/SEC-2/19

**B.Sc. 4th Semester (Honours) Examination, 2019****BOTANY**

Course ID : 41315

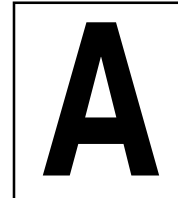
Paper Code : 405/SEC-2

Course Title : Mushroom Culture Technology

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour

*The figures in the margin indicate full marks.**Candidates should answer all questions.**Each question carries two marks.*Answer *all* the questions.

2×20=40

Choose the correct answer from the four options given under each question.

1. Edible mushrooms are \_\_\_\_\_ rich food.

- (A) Carbohydrate
- (B) Protein
- (C) Fat
- (D) Vitamin

2. Mushrooms are \_\_\_\_\_ of fungi.

- (A) Fruit body
- (B) Vegetative body
- (C) Resting stage
- (D) Conidiophore

3. Which mushroom is not cultivated in India?

- (A) *Volvariella volvacea*
- (B) *Agaricus bisporus*
- (C) *Pleurotus spp.*
- (D) *Cordyceps spp.*

4. Which one is not an edible mushroom?

- (A) *Pleurotus citrinopileatus*
- (B) *Calocybe indica*
- (C) *Amanita phalloides*
- (D) *Lentinula edodes*

5. Seeds of mushroom are called \_\_\_\_\_.

- (A) Spawns
- (B) Spores
- (C) Grains
- (D) Mycelia

6. Indoor cultivation of *Pleurotus* or oyster mushroom is generally done in

- (A) Wooden box
- (B) Polythene or PP bag
- (C) Tray
- (D) Glass bottle

7. Mushrooms are nutritionally important as they contain

- (A) Only protein
- (B) Protein and low fat
- (C) Protein, low fat and vitamins
- (D) Protein, low fat, vitamins and minerals

8. Silver spoon turns black when dipped in extract of mushroom, it is a test of

- (A) Edible mushroom
- (B) Non-edible mushroom
- (C) Deadly poisonous mushroom
- (D) Wild mushroom

9. Commercial spawn of *Pleurotus* mushroom mostly consist of

- (A) Spore culture of mushroom
- (B) Pure mycelial culture
- (C) Grain spawn or mycelia on cereal grains
- (D) Portion of fruit body

10. Medium for subculturing pure culture of mushroom fungi—

- (A) Potato-Dextrose-Agar (PDA medium)
- (B) Nutrient Agar medium
- (C) White's medium
- (D) Carboxymethyl cellulose (CMC) medium

11. Mushroom fungi are

- (A) Saprophytic
- (B) Parasitic
- (C) Symbiotic
- (D) Autotrophic

12. Function of 'CASING' of Button mushroom beds

- (A) to stimulate the fungus from vegetative mycelium phase to reproductive stage i.e. to fruit body development.
- (B) to regulate the flow of nutrient from compost to developing pinheads.
- (C) to keep the compost, fully grown with mycelium in good condition.
- (D) All of the above

13. Mushroom fungi                      Common name

- |                                      |                            |
|--------------------------------------|----------------------------|
| (a) <i>Pleurotus citrinopileatus</i> | (i) Paddy straw mushroom   |
| (b) <i>Volvariella volvacea</i>      | (ii) White button mushroom |
| (c) <i>Agaricus bisporus</i>         | (iii) Oyster mushroom      |

Which of the following matches are correct combination?

- (A) (a)-(i); (b)-(iii); (c)-(i)
- (B) (a)-(iii); (b)-(ii); (c)-(i)
- (C) (a)-(iii); (b)-(i); (c)-(ii)
- (D) None of the above

14. The suitable temperature range for fruit body development on *Agaricus bisporus* bed

- (A) 14–18°C
- (B) 24–28°C
- (C) 28–32°C
- (D) None of the above

15. Composting is not essential in mushroom bed preparation for cultivation of \_\_\_\_\_ mushroom.

- (A) *Agaricus bisporus*
- (B) *Pleurotus citrinopileatus*
- (C) *Volvariella volvacea*
- (D) None of the above

16. The pioneer Mushroom Research Institute in India—

- (A) Solan, Himachal Pradesh
- (B) Coimbatore, Tamil Nadu
- (C) Bangaluru, Karnataka
- (D) Ludhiana, Punjab

17. Ginger Blotch is a \_\_\_\_\_ disease of mushroom.

- (A) Fungal
- (B) Bacterial
- (C) Nematode
- (D) Viral

18. Which is not a long term storage of mushroom?

- (A) Canning
- (B) Refrigeration at 14–16°C
- (C) Drying
- (D) Storage in salt solution

19. The reason of mushroom damage by various biotic agents like fungi, bacteria, nematode or insect pests during mushroom cultivation—

- (A) Use of unpasteurized compost.
- (B) Unhygienic condition of cropping room.
- (C) Improper air circulation and ventilation in cropping room.
- (D) All of the above

20. It is a method of composting for *Agaricus bisporus* which consists of two phases: outdoor composting (Phase-I) of 13-15 days followed by pasteurization and conditioning of compost in a pasteurization tunnel (Phase II) of 5-7 days. It is the

- (A) Short method of composting
  - (B) Long method of composting
  - (C) Outdoor composting
  - (D) Natural composting
-

SH-IV/Botany/405/SEC-2/19

**B.Sc. 4th Semester (Honours) Examination, 2019****BOTANY**

Course ID : 41315

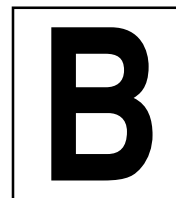
Paper Code : 405/SEC-2

Course Title : Mushroom Culture Technology

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour

*The figures in the margin indicate full marks.**Candidates should answer all questions.**Each question carries two marks.*Answer *all* the questions.

2×20=40

1. Which mushroom is not cultivated in India?
  - (A) *Volvariella volvacea*
  - (B) *Agaricus bisporus*
  - (C) *Pleurotus spp.*
  - (D) *Cordyceps spp.*
  
2. Indoor cultivation of *Pleurotus* or oyster mushroom is generally done in
  - (A) Wooden box
  - (B) Polythene or PP bag
  - (C) Tray
  - (D) Glass bottle
  
3. Commercial spawn of *Pleurotus* mushroom mostly consist of
  - (A) Spore culture of mushroom
  - (B) Pure mycelial culture
  - (C) Grain spawn or mycelia on cereal grains
  - (D) Portion of fruit body
  
4. Mushrooms are \_\_\_\_\_ of fungi.
  - (A) Fruit body
  - (B) Vegetative body
  - (C) Resting stage
  - (D) Conidiophore
  
5. Mushroom fungi are
  - (A) Saprophytic
  - (B) Parasitic
  - (C) Symbiotic
  - (D) Autotrophic
  
6. Mushroom fungi                      Common name
 

(a) <i>Pleurotus citrinopileatus</i>	(i) Paddy straw mushroom
(b) <i>Volvariella volvacea</i>	(ii) White button mushroom
(c) <i>Agaricus bisporus</i>	(iii) Oyster mushroom

Which of the following matches are correct combination?

  - (A) (a)-(i); (b)-(iii); (c)-(i)
  - (B) (a)-(iii); (b)-(ii); (c)-(i)
  - (C) (a)-(iii); (b)-(i); (c)-(ii)
  - (D) None of the above
  
7. Composting is not essential in mushroom bed preparation for cultivation of \_\_\_\_\_ mushroom.
  - (A) *Agaricus bisporus*
  - (B) *Pleurotus citrinopileatus*
  - (C) *Volvariella volvacea*
  - (D) None of the above

8. The reason of mushroom damage by various biotic agents like fungi, bacteria, nematode or insect pests during mushroom cultivation—

- (A) Use of unpasteurized compost.
- (B) Unhygienic condition of cropping room.
- (C) Improper air circulation and ventilation in cropping room.
- (D) All of the above

9. Function of 'CASING' of Button mushroom beds

- (A) to stimulate the fungus from vegetative mycelium phase to reproductive stage i.e. to fruit body development.
- (B) to regulate the flow of nutrient from compost to developing pinheads.
- (C) to keep the compost, fully grown with mycelium in good condition.
- (D) All of the above

10. It is a method of composting for *Agaricus bisporus* which consists of two phases: outdoor composting (Phase-I) of 13-15 days followed by pasteurization and conditioning of compost in a pasteurization tunnel (Phase II) of 5-7 days. It is the

- (A) Short method of composting
- (B) Long method of composting
- (C) Outdoor composting
- (D) Natural composting

Choose the correct answer from the four options given under each question.

11. Edible mushrooms are \_\_\_\_\_ rich food.

- (A) Carbohydrate
- (B) Protein
- (C) Fat
- (D) Vitamin

12. The pioneer Mushroom Research Institute in India—

- (A) Solan, Himachal Pradesh
- (B) Coimbatore, Tamil Nadu
- (C) Bangaluru, Karnataka
- (D) Ludhiana, Punjab

13. Seeds of mushroom are called \_\_\_\_\_.

- (A) Spawns
- (B) Spores
- (C) Grains
- (D) Mycelia

14. Which is not a long term storage of mushroom?

- (A) Canning
- (B) Refrigeration at 14–16°C
- (C) Drying
- (D) Storage in salt solution

15. Medium for subculturing pure culture of mushroom fungi—

- (A) Potato-Dextrose-Agar (PDA medium)
- (B) Nutrient Agar medium
- (C) White's medium
- (D) Carboxymethyl cellulose (CMC) medium

16. Ginger Blotch is a \_\_\_\_\_ disease of mushroom.

- (A) Fungal
- (B) Bacterial
- (C) Nematode
- (D) Viral



17. Mushrooms are nutritionally important as they contain

- (A) Only protein
- (B) Protein and low fat
- (C) Protein, low fat and vitamins
- (D) Protein, low fat, vitamins and minerals

18. The suitable temperature range for fruit body development on *Agaricus bisporus* bed

- (A) 14–18°C
- (B) 24–28°C
- (C) 28–32°C
- (D) None of the above

19. Which one is not an edible mushroom?

- (A) *Pleurotus citrinopileatus*
- (B) *Calocybe indica*
- (C) *Amanita phalloides*
- (D) *Lentinula edodes*

20. Silver spoon turns black when dipped in extract of mushroom, it is a test of

- (A) Edible mushroom
  - (B) Non-edible mushroom
  - (C) Deadly poisonous mushroom
  - (D) Wild mushroom
-

SH-IV/Botany/405/SEC-2/19

## B.Sc. 4th Semester (Honours) Examination, 2019

## BOTANY

Course ID : 41315

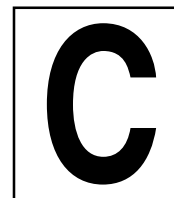
Paper Code : 405/SEC-2

Course Title : Mushroom Culture Technology

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour



The figures in the margin indicate full marks.

Candidates should answer all questions.

Each question carries two marks.

Answer all the questions.

2×20=40

- |                                      |                            |
|--------------------------------------|----------------------------|
| 1. Mushroom fungi                    | Common name                |
| (a) <i>Pleurotus citrinopileatus</i> | (i) Paddy straw mushroom   |
| (b) <i>Volvariella volvacea</i>      | (ii) White button mushroom |
| (c) <i>Agaricus bisporus</i>         | (iii) Oyster mushroom      |

Which of the following matches are correct combination?

- (A) (a)-(i); (b)-(iii); (c)-(i)  
 (B) (a)-(iii); (b)-(ii); (c)-(i)  
 (C) (a)-(iii); (b)-(i); (c)-(ii)  
 (D) None of the above

2. Function of 'CASING' of Button mushroom beds

- (A) to stimulate the fungus from vegetative mycelium phase to reproductive stage i.e. to fruit body development.  
 (B) to regulate the flow of nutrient from compost to developing pinheads.  
 (C) to keep the compost, fully grown with mycelium in good condition.  
 (D) All of the above

3. The reason of mushroom damage by various biotic agents like fungi, bacteria, nematode or insect pests during mushroom cultivation—

- (A) Use of unpasteurized compost.  
 (B) Unhygienic condition of cropping room.  
 (C) Improper air circulation and ventilation in cropping room.  
 (D) All of the above

4. Silver spoon turns black when dipped in extract of mushroom, it is a test of

- (A) Edible mushroom  
 (B) Non-edible mushroom  
 (C) Deadly poisonous mushroom  
 (D) Wild mushroom

5. Which one is not an edible mushroom?

- (A) *Pleurotus citrinopileatus*  
 (B) *Calocybe indica*  
 (C) *Amanita phalloides*  
 (D) *Lentinula edodes*

6. Commercial spawn of *Pleurotus* mushroom mostly consist of

- (A) Spore culture of mushroom  
 (B) Pure mycelial culture  
 (C) Grain spawn or mycelia on cereal grains  
 (D) Portion of fruit body

7. Indoor cultivation of *Pleurotus* or oyster mushroom is generally done in

- (A) Wooden box
- (B) Polythene or PP bag
- (C) Tray
- (D) Glass bottle

Choose the correct answer from the four options given under each question.

8. Edible mushrooms are \_\_\_\_\_ rich food.

- (A) Carbohydrate
- (B) Protein
- (C) Fat
- (D) Vitamin

9. The pioneer Mushroom Research Institute in India—

- (A) Solan, Himachal Pradesh
- (B) Coimbatore, Tamil Nadu
- (C) Bangaluru, Karnataka
- (D) Ludhiana, Punjab

10. Mushrooms are nutritionally important as they contain

- (A) Only protein
- (B) Protein and low fat
- (C) Protein, low fat and vitamins
- (D) Protein, low fat, vitamins and minerals

11. Ginger Blotch is a \_\_\_\_\_ disease of mushroom.

- (A) Fungal
- (B) Bacterial
- (C) Nematode
- (D) Viral

12. Which mushroom is not cultivated in India?

- (A) *Volvariella volvacea*
- (B) *Agaricus bisporus*
- (C) *Pleurotus spp.*
- (D) *Cordyceps spp.*

13. Mushrooms are \_\_\_\_\_ of fungi.

- (A) Fruit body
- (B) Vegetative body
- (C) Resting stage
- (D) Conidiophore

14. Seeds of mushroom are called \_\_\_\_\_.

- (A) Spawns
- (B) Spores
- (C) Grains
- (D) Mycelia

15. The suitable temperature range for fruit body development on *Agaricus bisporus* bed

- (A) 14–18°C
- (B) 24–28°C
- (C) 28–32°C
- (D) None of the above

16. Composting is not essential in mushroom bed preparation for cultivation of \_\_\_\_\_ mushroom.

- (A) *Agaricus bisporus*
- (B) *Pleurotus citrinopileatus*
- (C) *Volvariella volvacea*
- (D) None of the above

17. Which is not a long term storage of mushroom?

- (A) Canning
- (B) Refrigeration at 14–16°C
- (C) Drying
- (D) Storage in salt solution

18. Medium for subculturing pure culture of mushroom fungi—

- (A) Potato-Dextrose-Agar (PDA medium)
- (B) Nutrient Agar medium
- (C) White's medium
- (D) Carboxymethyl cellulose (CMC) medium

19. Mushroom fungi are

- (A) Saprophytic
- (B) Parasitic
- (C) Symbiotic
- (D) Autotrophic

20. It is a method of composting for *Agaricus bisporus* which consists of two phases: outdoor composting (Phase-I) of 13-15 days followed by pasteurization and conditioning of compost in a pasteurization tunnel (Phase II) of 5-7 days. It is the

- (A) Short method of composting
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  - (C) Outdoor composting
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-

SH-IV/Botany/405/SEC-2/19

**B.Sc. 4th Semester (Honours) Examination, 2019****BOTANY**

Course ID : 41315

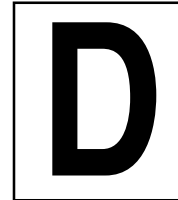
Paper Code : 405/SEC-2

Course Title : Mushroom Culture Technology

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour

*The figures in the margin indicate full marks.**Candidates should answer all questions.**Each question carries two marks.*Answer *all* the questions.

2×20=40

1. Commercial spawn of *Pleurotus* mushroom mostly consist of

- (A) Spore culture of mushroom
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- (C) Grain spawn or mycelia on cereal grains
- (D) Portion of fruit body

2. Composting is not essential in mushroom bed preparation for cultivation of \_\_\_\_\_ mushroom.

- (A) *Agaricus bisporus*
- (B) *Pleurotus citrinopileatus*
- (C) *Volvariella volvacea*
- (D) None of the above

3. Mushrooms are \_\_\_\_\_ of fungi.

- (A) Fruit body
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- (C) Resting stage
- (D) Conidiophore

4. The pioneer Mushroom Research Institute in India—

- (A) Solan, Himachal Pradesh
- (B) Coimbatore, Tamil Nadu
- (C) Bangaluru, Karnataka
- (D) Ludhiana, Punjab

5. Mushroom fungi

- (a) *Pleurotus citrinopileatus*
- (b) *Volvariella volvacea*
- (c) *Agaricus bisporus*

Common name

- (i) Paddy straw mushroom
- (ii) White button mushroom
- (iii) Oyster mushroom

Which of the following matches are correct combination?

- (A) (a)-(i); (b)-(iii); (c)-(i)
- (B) (a)-(iii); (b)-(ii); (c)-(i)
- (C) (a)-(iii); (b)-(i); (c)-(ii)
- (D) None of the above

6. Which is not a long term storage of mushroom?

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  - (C) Tray
  - (D) Glass bottle
-

SP-IV/Botany/401/C-1D/19

**B.Sc. 4th Semester (Programme) Examination, 2019****BOTANY****(Plant Physiology and Metabolism)****Paper : 401/C-1D****Course ID : 41318****Time: 1 Hour 15 Minutes****Full Marks: 25***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।  
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।

**1. Answer any five questions from the following:****1×5=5**

নীচের যে কোনো পাঁচটি প্রশ্নের উত্তর দাও :

(a) What is Guttation?

নিঃস্রাবণ কাকে বলে?

(b) What is phloem loading?

Phloem loading কাকে বলে?

(c) What will happen to water potential when a solute is added to water?

জলে দ্রাব যোগ করলে জল বিভব কীরূপ পরিবর্তিত হয়?

(d) Which compound acts as CO<sub>2</sub> acceptor in calvin cycle.কেলভিন চক্র কোন জৈব যৌগ CO<sub>2</sub> গ্রাহক হিসাবে কাজ করে?

(e) Write down the full form of IAA and NADP.

IAA ও NADP -এর সম্পূর্ণ নাম লেখো।

(f) Distinguish between coenzyme and apoenzyme.

কোএনজাইম ও অ্যাপোএনজাইমের মধ্যে পার্থক্য নির্ণয় করো।

(g) What is Red drop?

লোহিত চ্যুতি কী?

(h) Name one symbiotic nitrogen fixing microorganism.

একটি মিথোজীবী নাইট্রোজেন সংবন্ধনকারী অণুজীবের নাম লেখো।



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

5×2=10

নীচের যে কোনো দুটি প্রশ্নের উত্তর দাও :

(a) What are different criteria of an element to be essential? Mention functions of Magnesium and its deficiency symptoms. 2+1½+1½=5

একটি মৌলের অপরিহার্য হওয়ার জন্য শর্তগুলি কী কী? Magnesium -এর কাজ ও অভাবজনিত লক্ষণগুলি উল্লেখ করো।

(b) Discuss the internal and external factors that affect transpiration in a plant.

2½+2½=5

প্রস্বেদনের আভ্যন্তরীণ এবং বাহ্যিক শর্তগুলি আলোচনা করো।

(c) Describe the role of Auxins in plant growth. What is Apical dominance? 4+1=5

উদ্ভিদের বৃদ্ধিতে অক্সিনের ভূমিকা বর্ণনা করো। অগ্রস্থ প্রকটতা কাকে বলে?

(d) What is critical day length? How light regulate phytochrome for flowering in long day and short day plant? 1+4=5

সংকট আলোককাল কী? দীর্ঘ দিবা উদ্ভিদ এবং হ্রস্ব দিবা উদ্ভিদে ফুল ফোটার জন্য আলো কীভাবে phytochrome-কে নিয়ন্ত্রণ করে?

3. Answer *any one* question from the following:

10×1=10

নীচের যে কোনো একটি প্রশ্নের উত্তর দাও :

(a) What is quantum requirement? Describe photochemical phases of photosynthesis.

2+8=10

কোয়ান্টাম রিকোয়ারমেন্ট কী? সালোকসংশ্লেষে আলোক রাসায়নিক দশার বর্ণনা দাও।

(b) Why krebs cycle is termed as TCA cycle? Describe the chemical reactions involved in the oxidation of Pyruvic acid. 2+8=10

ক্রেন্স চক্রকে ট্রাইকার্বক্সিলিক অ্যাসিড চক্র বলা হয় কেন? ক্রেন্স চক্রে পাইরুভিক অ্যাসিড জারণের রাসায়নিক বিক্রিয়াগুলি উল্লেখ করো।

SP-IV/Botany/SEC-2/19

**B.Sc. 4th Semester (Programme) Examination, 2019****BOTANY**

Course ID : 41310

Paper Code : 404/SEC-2

Course Title : Nursery &amp; Gardening

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour

*The figures in the margin indicate full marks.**Candidates should answer all questions.**Each question carries two marks.*

Answer the following questions.

2×20=40

1. In case of onion, time of sowing in West Bengal is

- (A) October
- (B) September
- (C) May
- (D) March

2. When a branch is lowered beneath the soil and it develops roots, this phenomenon is known as

- (A) Layering
- (B) Cutting
- (C) Grafting
- (D) Seming

3. Cultivation of 'garlic' mainly prefer in

- (A) Clayey soil
- (B) Mixed soil
- (C) Sandy loam
- (D) Saline soil

4. Plant to which a disease is caused is called

- (A) Pathogen
- (B) Parasite
- (C) Host
- (D) Symptom

5. Which of the following is/are the factor/factors causing dormancy of seeds?

- (A) Seed coat impermeable to water
- (B) Seed coat impermeable to oxygen
- (C) Immaturity of the embryo
- (D) All of the above

6. In many species the germination of the seeds is affected by light resulting in seed dormancy. Such light sensitive seeds are called

- (A) Photoblastic
- (B) Endospermic
- (C) Phototropic
- (D) Photosynthesizing

7. Seed which just wait for suitable environmental condition to germinate are said to be

- (A) Positively Photoblastic
- (B) Quiescent
- (C) Negatively Photoblastic
- (D) Both (A) and (B)

8. In albuminous seeds, food is stored in

- (A) Plumule
- (B) Testa
- (C) Endosperm
- (D) Cotyledons

9. Due to inhibition of water, seed coat become

- (A) more permeable to  $O_2$  and water.
- (B) less resistant to outward growth of the embryo.
- (C) Both (A) and (B)
- (D) None of the above

10. Root portion in grafting is

- (A) Stock
- (B) Scion
- (C) Stolon
- (D) Stem

11. Oxygen importance in germination was shown by

- (A) Robertson
- (B) Fyson
- (C) Lysenko
- (D) Banes

12. Rhizome helps in vegetative reproduction in

- (A) Solanum
- (B) Ginger
- (C) Brinjal
- (D) Tomato

13. In grafting contact is made between

- (A) Phloem
- (B) Xylem
- (C) Cambium
- (D) Flower

14. Seed viability is tested by the following method:

- (A) TTC test
- (B) Dormancy test
- (C) Seed protein test
- (D) Iodine test

15. Bulb helps in vegetative reproduction in

- (A) Tomato
- (B) Lady's finger
- (C) Carrot
- (D) Onion

16. On the basis seed viability, seeds are

- (A) One
- (B) Two
- (C) Three
- (D) Four

17. In layering the shoot apex is

- (A) covered by soil
- (B) free in air
- (C) free in water
- (D) None of the above

18. Bordeaux mixture has

- (A) Copper sulphate
- (B) Lime
- (C) Water
- (D) All of the above

19. In case of mist chamber, high relative humidity facilitate

- (A) better root development
- (B) better shoot development
- (C) better fruit development
- (D) better leaf development

20. Little leaf of Brinjal is caused by

- (A) Algae
  - (B) Mycoplasma
  - (C) Fungus
  - (D) Virus
-

SP-IV/Botany/SEC-2/19

**B.Sc. 4th Semester (Programme) Examination, 2019****BOTANY**

Course ID : 41310

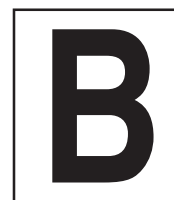
Paper Code : 404/SEC-2

Course Title : Nursery &amp; Gardening

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour

*The figures in the margin indicate full marks.**Candidates should answer all questions.**Each question carries two marks.*

Answer the following questions.

2×20=40

1. Cultivation of 'garlic' mainly prefer in

- (A) Clayey soil
- (B) Mixed soil
- (C) Sandy loam
- (D) Saline soil

2. In many species the germination of the seeds is affected by light resulting in seed dormancy. Such light sensitive seeds are called

- (A) Photoblastic
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- (C) Phototropic
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3. Due to inhibition of water, seed coat become

- (A) more permeable to O<sub>2</sub> and water.
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- (C) Both (A) and (B)
- (D) None of the above

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- (A) Layering
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- (C) Grafting
- (D) Seming

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- (C) Lysenko
- (D) Banes

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12. On the basis seed viability, seeds are  
(A) One  
(B) Two  
(C) Three  
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(C) Water  
(D) All of the above
15. Root portion in grafting is  
(A) Stock  
(B) Scion  
(C) Stolon  
(D) Stem
16. In layering the shoot apex is  
(A) covered by soil  
(B) free in air  
(C) free in water  
(D) None of the above

**17.** Seed which just wait for suitable environmental condition to germinate are said to be

- (A) Positively Photoblastic
- (B) Quiescent
- (C) Negatively Photoblastic
- (D) Both (A) and (B)

**18.** Seed viability is tested by the following method:

- (A) TTC test
- (B) Dormancy test
- (C) Seed protein test
- (D) Iodine test

**19.** Plant to which a disease is caused is called

- (A) Pathogen
- (B) Parasite
- (C) Host
- (D) Symptom

**20.** In albuminous seeds, food is stored in

- (A) Plumule
  - (B) Testa
  - (C) Endosperm
  - (D) Cotyledons
-

SP-IV/Botany/SEC-2/19

**B.Sc. 4th Semester (Programme) Examination, 2019****BOTANY**

Course ID : 41310

Paper Code : 404/SEC-2

Course Title : Nursery &amp; Gardening

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour

*The figures in the margin indicate full marks.**Candidates should answer all questions.**Each question carries two marks.*

Answer the following questions.

2×20=40

- |                                                                                                                                                                                                           |                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. In grafting contact is made between</p> <p>(A) Phloem<br/>(B) Xylem<br/>(C) Cambium<br/>(D) Flower</p>                                                                                              | <p>4. In albuminous seeds, food is stored in</p> <p>(A) Plumule<br/>(B) Testa<br/>(C) Endosperm<br/>(D) Cotyledons</p>                                                                                                  |
| <p>2. Rhizome helps in vegetative reproduction in</p> <p>(A) Solanum<br/>(B) Ginger<br/>(C) Brinjal<br/>(D) Tomato</p>                                                                                    | <p>5. Plant to which a disease is caused is called</p> <p>(A) Pathogen<br/>(B) Parasite<br/>(C) Host<br/>(D) Symptom</p>                                                                                                |
| <p>3. In case of mist chamber, high relative humidity facilitate</p> <p>(A) better root development<br/>(B) better shoot development<br/>(C) better fruit development<br/>(D) better leaf development</p> | <p>6. Due to inhibition of water, seed coat become</p> <p>(A) more permeable to O<sub>2</sub> and water.<br/>(B) less resistant to outward growth of the embryo.<br/>(C) Both (A) and (B)<br/>(D) None of the above</p> |



7. In many species the germination of the seeds is affected by light resulting in seed dormancy. Such light sensitive seeds are called

- (A) Photoblastic
- (B) Endospermic
- (C) Phototropic
- (D) Photosynthesizing

8. In case of onion, time of sowing in West Bengal is

- (A) October
- (B) September
- (C) May
- (D) March

9. On the basis of seed viability, seeds are

- (A) One
- (B) Two
- (C) Three
- (D) Four

10. Seeds which just wait for suitable environmental conditions to germinate are said to be

- (A) Positively Photoblastic
- (B) Quiescent
- (C) Negatively Photoblastic
- (D) Both (A) and (B)

11. In layering the shoot apex is

- (A) covered by soil
- (B) free in air
- (C) free in water
- (D) None of the above

12. Cultivation of 'garlic' mainly prefers in

- (A) Clayey soil
- (B) Mixed soil
- (C) Sandy loam
- (D) Saline soil

13. When a branch is lowered beneath the soil and it develops roots, this phenomenon is known as

- (A) Layering
- (B) Cutting
- (C) Grafting
- (D) Sowing

14. Which of the following is/are the factor/factors causing dormancy of seeds?

- (A) Seed coat impermeable to water
- (B) Seed coat impermeable to oxygen
- (C) Immaturity of the embryo
- (D) All of the above

15. Seed viability is tested by the following method:

- (A) TTC test
- (B) Dormancy test
- (C) Seed protein test
- (D) Iodine test

16. Bulb helps in vegetative reproduction in

- (A) Tomato
- (B) Lady's finger
- (C) Carrot
- (D) Onion

17. Bordeaux mixture has  
(A) Copper sulphate  
(B) Lime  
(C) Water  
(D) All of the above

18. Root portion in grafting is  
(A) Stock  
(B) Scion  
(C) Stolon  
(D) Stem

19. Oxygen importance in germination was shown by

- (A) Robertson  
(B) Fyson  
(C) Lysenko  
(D) Banes

20. Little leaf of Brinjal is caused by

- (A) Algae  
(B) Mycoplasma  
(C) Fungus  
(D) Virus
-

SP-IV/Botany/SEC-2/19

**B.Sc. 4th Semester (Programme) Examination, 2019****BOTANY**

Course ID : 41310

Paper Code : 404/SEC-2

Course Title : Nursery &amp; Gardening

TEST BOOKLET SERIES

Full Marks: 40

Time: 1 Hour

*The figures in the margin indicate full marks.**Candidates should answer all questions.**Each question carries two marks.*

Answer the following questions.

2×20=40

- |                                                                                                                                                                                                                                  |                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <p>1. Due to inhibition of water, seed coat become</p> <p>(A) more permeable to O<sub>2</sub> and water.</p> <p>(B) less resistant to outward growth of the embryo.</p> <p>(C) Both (A) and (B)</p> <p>(D) None of the above</p> | <p>4. On the basis seed viability, seeds are</p> <p>(A) One</p> <p>(B) Two</p> <p>(C) Three</p> <p>(D) Four</p>        |
| <p>2. Bulb helps in vegetative reproduction in</p> <p>(A) Tomato</p> <p>(B) Lady's finger</p> <p>(C) Carrot</p> <p>(D) Onion</p>                                                                                                 | <p>5. In grafting contact is made between</p> <p>(A) Phloem</p> <p>(B) Xylem</p> <p>(C) Cambium</p> <p>(D) Flower</p>  |
| <p>3. When a branch is Lowered beneath the soil and it develops roots, this phenomenon is known as</p> <p>(A) Layering</p> <p>(B) Cutting</p> <p>(C) Grafting</p> <p>(D) Seming</p>                                              | <p>6. Bordeaux mixture has</p> <p>(A) Copper sulphate</p> <p>(B) Lime</p> <p>(C) Water</p> <p>(D) All of the above</p> |

7. In albuminous seeds, food is stored in  
(A) Plumule  
(B) Testa  
(C) Endosperm  
(D) Cotyledons
8. In case of mist chamber, high relative humidity facilitate  
(A) better root development  
(B) better shoot development  
(C) better fruit development  
(D) better leaf development
9. In case of onion, time of sowing in West Bengal is  
(A) October  
(B) September  
(C) May  
(D) March
10. Little leaf of Brinjal is caused by  
(A) Algae  
(B) Mycoplasma  
(C) Fungus  
(D) Virus
11. Seed which just wait for suitable environmental condition to germinate are said to be  
(A) Positively Photoblastic  
(B) Quiescent  
(C) Negatively Photoblastic  
(D) Both (A) and (B)
12. Rhizome helps in vegetative reproduction in  
(A) Solanum  
(B) Ginger  
(C) Brinjal  
(D) Tomato
13. Which of the following is/are the factor/factors causing dormancy of seeds?  
(A) Seed coat impermeable to water  
(B) Seed coat impermeable to oxygen  
(C) Immaturity of the embryo  
(D) All of the above
14. In layering the shoot apex is  
(A) covered by soil  
(B) free in air  
(C) free in water  
(D) None of the above
15. Cultivation of 'garlic' mainly prefer in  
(A) Clayey soil  
(B) Mixed soil  
(C) Sandy loam  
(D) Saline soil
16. Seed viability is tested by the following method:  
(A) TTC test  
(B) Dormancy test  
(C) Seed protein test  
(D) Iodine test

17. Root portion in grafting is

- (A) Stock
- (B) Scion
- (C) Stolon
- (D) Stem

18. Plant to which a disease is caused is called

- (A) Pathogen
- (B) Parasite
- (C) Host
- (D) Symptom

19. Oxygen importance in germination was shown by

- (A) Robertson
- (B) Fyson
- (C) Lysenko
- (D) Banes

20. In many species the germination of the seeds is affected by light resulting in seed dormancy. Such light sensitive seeds are called

- (A) Photoblastic
  - (B) Endospermic
  - (C) Phototropic
  - (D) Photosynthesizing
-

*SH-IV/Botany/404/GE-4/(PR)/19*

**B.Sc. 4th Semester (Honours) Practical Examination, 2019**

**BOTANY**

**(Plant Physiology and Metabolism)**

**Paper : 404/GE-4**

**Course ID : 41324**

**Time: 2 Hours**

**Full Marks: 15**

*The figures in the right hand side margin indicate marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

*দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।  
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।*

- [N.B. – (a) Note the break up of marks of each question carefully.  
(b) Write down the question number 1 in your answer scripts after collection by draw of lots and get them endorsed by one of the examiners.  
(c) Endorse all your preparations, drawing and data by any one of the Examiners.]

Select experiments from cards drawn from the examiners.

প্রদত্ত কার্ড থেকে উদ্ভিদের শারীরবৃত্তীয় পরীক্ষাগুলি সম্পাদন করো।

1. Perform the experiment as marked Q.1. (Requisition-2, Set up-2, Result-5, Comment-1) 10  
Q.1. পরীক্ষাটি সম্পাদন করো। (প্রয়োজনীয় উপকরণের তালিকা-2, পরীক্ষা সম্পাদন-2, ফলাফল-5, মন্তব্য-1)
2. Submission Practical record book. 2  
ব্যবহারিক খাতা প্রদান করো।
3. Viva voce 3  
মৌখিক প্রশ্নাবলী

*SH-IV/Botany/404/GE-4/(PRI)/19*

**B.Sc. 4th Semester (Honours) Practical Examination, 2019**

**BOTANY**

**(Plant Physiology and Metabolism)**

**Paper : 404/GE-4**

**Course ID : 41324**

*Instruction to the Examiners:*

1. Candidates are required to pick-up question number 1 by draw of card supplied by the centre.
2. All preparations, experimental set ups, requisition if needed must be endorsed by one of the examiners on the main script.
3. A key to the materials supplied, question-wise and candidate-wise, should be submitted to the convener along with answer scripts.
4. Materials, solutions, which are indicated in the question paper should be supplied; otherwise selection of suitable materials may be made by the internal examiner.
5. Internal examiners are requested to keep ready, the materials, reagents, chemicals, glasswares – required for experiments of question number 1 after receiving the question.
6. Experiments for the question no. 1 are given below. Examiners are requested to make card from the following experiment:
  - (a) Determination of osmotic potential of plant ceu sap by plasmolytic method.
  - (b) To study the effect of two environmental factors (light and humidity) on transpiration by excised twig.
  - (c) Calculation of stomatal index and stomatal frequency of a mesophyte and xerophytic plant leaf.
  - (d) To study the effect of light intensity and bicarbonate concentration on O<sub>2</sub> evolution in photosynthesis.
  - (e) Comparison of the rate of respiration in any two parts of a plant supplied.
7. Laboratory records should be separately assessed.
8. Viva voce should be conducted jointly by the examiners. The time should be limited to maximum of ten minutes for each candidate. Candidates should be called an one at a time, for Viva voce.
9. Answer scripts are to be sent to the convener/university in separate sealed covers within a week from the date of completion of the examinations.

**41324/13249**

10. Not more than 16 examinees should be taken in a batch.
  11. Marks for questions (1, 2, 3 and 4) should be entered strictly in the main answer scripts along with part markings.
  12. Examined scripts should be signed jointly by the examiners.
  13. Full name, signature and addresses of examiners should be sent to the Convener/University.
-



*SP-IV/Botany/401/C-1D/(PR)/19*

**B.Sc. 4th Semester (Programme) Practical Examination, 2019**

**BOTANY**

**(Plant Physiology and Metabolism)**

**Paper : 401/C-1D**

**Course ID : 41328**

**Time: 2 Hours**

**Full Marks: 15**

*The figures in the right hand side margin indicate marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

*দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।  
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।*

- [N.B. – (a) Note the break up of marks of the question carefully.  
(b) Write down the question number in your answer scripts after collection by draw of lots and get them endorsed by one of the examiners.  
(c) Endorse all your preparation, requisition, drawing and data by any one of the Examiners in the Main script.]

Select experiments from card drawn from the examiners.

প্রদত্ত কার্ড থেকে উদ্ভিদ শারীরবৃত্তীয় পরীক্ষাগুলি সম্পাদন করো।

1. Perform the experiment as mentioned in Q.1. (Requisition-2, Set up-2, Result-5, Comment-1) 10  
Q.1. পরীক্ষাটি সম্পাদন করো। (প্রয়োজনীয় উপকরণ-2, পরীক্ষা সম্পাদন-2, ফলাফল-5, মন্তব্য-1)
2. Submission of Practical record book. 2  
ব্যবহারিক খাতা জমা করো।
3. Viva Voce 3  
মৌখিক প্রশ্নাবলী

*SP-IV/Botany/401/C-1D/(PRI)/19*

**B.Sc. 4th Semester (Programme) Practical Examination, 2019**

**BOTANY**

**(Plant Physiology and Metabolism)**

**Paper : 401/C-1D**

**Course ID : 41328**

*Instruction to the Examiners:*

1. Candidates are required to pick-up question number 1 by draw of card supplied by the centre.
2. All preparations, experiments, requisition, results if needed must be endorsed by one of the examiners on the main script.
3. A key to the materials supplied, question wise and candidate wise, should be submitted to the Convener/University along with the answer scripts.
4. Materials, solutions, which are indicated in the question paper should be supplied; otherwise selection of materials may be made by the internal examiner.
5. Internal examiners are requested to keep ready the materials, reagents, chemicals and glasswares – required for experiments of question number 1 after receiving the questions from the university.
6. Experiments for the question no. 1 are given below. Examiners are requested to make card from the following experiment.
  - (a) Determination of osmotic potential of plant cell sap by plasmolytic method.
  - (b) To study the effect of the environmental factors (light and humidity) in transpiration by excised twig.
  - (c) Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophytic plant leaf.
  - (d) To study the effect of light intensity and bicarbonate concentration on O<sub>2</sub> evolution in photosynthesis.
  - (e) Comparison of the rate of respiration in any two parts of a plant supplied.
7. Laboratory records should be separately assessed.
8. Viva voce should be conducted jointly by the examiners. The time should be limited to maximum of ten minutes for each candidate. Candidates should be called on one at a time, for Viva voce.
9. Answer scripts are should be sent to the convener/university in separate sealed covers within a week from the date of completion of the examinations.

***SP-IV/Botany/401/C-1D/(PRI)/19***

- 10.** Not more than 16 examinees should be taken in a batch.
  - 11.** Marks for question number 1, 2, 3 should be entered strictly in the main answer scripts along with part markings.
  - 12.** Examined scripts should be signed jointly by the examiners.
  - 13.** Full names, signature, addresses and mobile number of examiners should be sent to the Convener/ University along with key and answer scripts.
-