

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

BOTANY

Course ID : 51321

Course Code : SHBOT/501/C-11

Course Title: Reproductive Biology and Angiosperms and Palynology

Instructions to the Examiners

1. For temporary preparation of slide of the morphological study of pollen grains following plant materials to be supplied for Q. No.–1:
 - (a) Anther of *Hibiscus* sp (Pantoporate pollen)
 - (b) Anther of *Cassia* sp (3-Colporate)
 - (c) Anther of *Bauhinia* sp (Porate)
 - (d) Anther of *Acacia* sp (inaperturate, polyad)
2. For Q. No.–2, in case of specimens 'B' and 'C', Examiners are requested to select slide/photographic documents from the following:
 - (a) Amphitropous ovule.
 - (b) Anotropous ovule.
 - (c) Pollinia
 - (d) Pollen in Polyad condition.
 - (e) Tri-colpate pollen.
 - (f) Mature egg apparatus.
 - (g) Aril
 - (h) Obturator
 - (i) Hypostase
3. Not more than 20 examinees should be taken in a batch.
4. Materials should be changed for each batch.
5. 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.
6. Laboratory records should be separately assessed and examiners are requested to take note of proper endorsement of practical records book of candidates by concerned teachers.
7. 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.

B.Sc. 5th Semester (Honours) Examination, 2019-20**BOTANY****Course ID : 51312****Course Code : SHBOT/502/C-12**

Course Title: Plant Physiology

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
- (a) What happens when a turgid cell is immersed into a hypertonic solution?
 - (b) Why are microelements often called trace elements?
 - (c) What do you mean by vernalization?
 - (d) Write down the fullform of 2,4-D.
 - (e) Define antiport.
 - (f) What do you mean by diffusion pressure deficit?
 - (g) Mention one natural and one synthetic member of IAA.
 - (h) What is HIR?
2. Answer *any two* of the following: 5×2=10
- (a) Briefly elaborate the mechanism of water absorption by plant root. What is meant by facilitated diffusion? 4+1=5
 - (b) Write down the criteria of essentiality of mineral elements. Enumerate the physiological roles performed by Boron and Magnesium in green plants. 2+(1½+1½)=5
 - (c) Elucidate the chemical nature of phytochrome and discuss its role in the flowering of angiosperms. 3+2=5
 - (d) Describe briefly the phloem loading mechanism in plants. 5
3. Answer *any one* of the following: 10×1=10
- (a) Distinguish between primary and secondary dormancy of seeds. Write down in brief the important methods of breaking seed dormancy. Mention the significance of seed dormancy. 2+6+2=10
 - (b) Briefly describe the physiological role of cytokinin in growth and development of plants. What is antitranspirant? Discuss the role of potassium ion in stomatal opening and closing. 6+2+2=10
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B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

BOTANY

Course ID : 51322

Course Code : SHBOT-502-C-12

Course Title: Plant Physiology

Time: 2 Hours

Full Marks: 15

The figure in the right hand side margin indicate marks.

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

N.B. (a) Note the break-up of marks for question carefully.

(b) Write down the question number 1 in your answer scripts after collection by draw of lots and get endorsed by one of the examiners.

(c) Endorsed all your preparations, drawing, graph and data by one of the examiners.

(d) Label properly all your preparations/experimental setups and leave them in support of your work to be assessed.

1. Perform the experiment as marked Q.1.

(Requisition-2, Setup-2, Result-4, Comment-2) 10

2. Laboratory Records 2

3. Viva-Voce 3

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

BOTANY

Course ID : 51322

Course Code : SHBOT-502-C-12

Course Title: Plant Physiology

Instruction to the Examiners.

1. Candidates are required to pick-up question number 1 by draw of card supplied by the centre.
2. Experiments for the question no.1 are given below. Examiners are requested to make card from the following experiment.
 - (a) Determination of isotonic concentration and osmotic pressure of plant cell sap by plasmolytic method.
 - (b) Study of the effect of humidity and light on the rate of transpiration in excised twig/leaf.
 - (c) Determination of water absorption, retention and transpiration.
 - (d) Calculate the Stomatal index and Stomatal frequency from the lower/upper surfaces of leaves of a mesophyte.
3. All preparations, experimental, data, graph, results if needed must be endorsed by one of the examiners on the main 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. A key to the materials supplied candidate wise and it should be submitted to the convener/university along with the answer scripts.
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 one at a time; for viva-voce.
9. Not more than 16 examinees should be taken in a batch.
10. Marks for question number 1 should be entered strictly in the main answer scripts along with part markings.
11. Examined scripts should be signed jointly by the examiners.
12. Full names, signature, address and mobile numbers of examiners should be sent to the convener/university along with 'key' and answer scripts.
13. Answer scripts are should be arranged according to the top sheet provided by the university.
14. Examined scripts should be submitted to the controller of examinations, BKU within 10 days after the completion of examinations.

B.Sc. 5th Semester (Honours) Examination, 2019-20**BOTANY****Course ID : 51316****Course Code : SH/BOT/503/DSE-1**

Course Title: Natural Resource Management

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* questions from the following: 1×5=5
- (a) Give examples of two non-renewable sources of energy.
 - (b) What do you mean by desertification?
 - (c) What is silviculture?
 - (d) What is RAMSAR Site?
 - (e) Write the full form of CBD.
 - (f) Name two non-timber forest products.
 - (g) What is the main function of GIS technology?
 - (h) Name two national resource management organisation.
2. Answer *any two* questions from the following: 5×2=10
- (a) Define natural resources and mention its different types. 2+3=5
 - (b) Point out different levels of biodiversity. What is Red Data Book? 3+2=5
 - (c) What is meant by soil degradation? What are the factors responsible for soil degradation? State any two practices to manage soil degradation. 1+2+2=5
 - (d) Write in brief ecological foot print with emphasis on carbon foot print. 5
3. Answer *any one* from the following: 10×1=10
- (a) What do you mean by sustainable development? Enumerate economic, ecological and socio-cultural approaches of sustainable utilization. 1+(3×3)=10
 - (b) Briefly describe different major and minor forest products. How can the depletion of forest be managed now a days? 7+3=10
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B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

BOTANY

Course ID : 51326

Course Code : SHBOT-503-DSE-1

Course Title: Natural Resource Management

Time: 2 Hours

Full Marks: 15

The figures in the right hand side margin indicate full marks.

1. Measure dominance of woody species of particular forest area/college campus by DBH method (From supplied data by the examiners). a-calculation-3, b-comment-4. 7
 2. Laboratory Records 3
 3. Viva Voce 5
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B.Sc. 5th Semester (Honours) Practical Examination, 2019-20**BOTANY****Course ID : 51326****Course Code : SHBOT-503-DSE-1**

Course Title: Natural Resource Management

Instructions to the Examiners.

1. Examiners are requested to supply diameters (at breast height) of different woody species of a particular forest area/college campus. (3 sets). As for example—

Annexure-I

Sl. No.	Tree species	Circumference at Breast height (cm.)
1	Jarul	124.2
2	Kanak Champa	150.8
3	Sisso	220.00
4	Sal	157.00
5	Falsa	140.2
6	Bandal Lathi	158
7	Sal	180
8	Bel	130
9	Sal	199
10	Kendu	200
11	Sal	204.4
12	Siris	250
13	Sal	298
14	Tamarind	188
15	Sal	210
16	Sal	170

2. Candidates are required to pick-up question number I by draw od card supplied by the examiners.
3. A key to the supplied materials, candidate wise should be submitted to the university along with the answer scripts. (evaluated)
4. Laboratory records should be separately assessed.
5. Viva Voce should be conducted jointly by the examiners. The time should be limited to maximum of five minutes for each candidate. Candidates should be called on one at a time for viva voce.
6. Not more than 15 examinees should be taken in a batch.
7. Examined scripts should be signed jointly by the examiners.
8. Full name, signature, addresses and mobile number of examiners should be sent to the university along with the key and answer scripts. (evaluated)

9. Answer scripts should be sent to the university in separate sealed covers within 7 days from the date of completion of the examinations.

10. Examinee should follow the equation:

Basal Area (BA) = $\frac{3.14 \times DBH^2}{4}$ to calculate the dominance value of the species.

B.Sc. 5th Semester (Honours) Examination, 2019-20**BOTANY****Course ID : 51317****Course Code : SHBOT-503-DSE-2**

Course Title: Plant Breeding

Time: 2 Hours**Full Marks: 40***The figures in the margin indicate full marks.**The questions are of equal value.*

1. Answer any *five* questions: 2×5=10
- (a) What is Primary introduction?
 - (b) What do you mean by inbreeding depression?
 - (c) What is nobilization?
 - (d) Distinguish between domestication and acclimatization.
 - (e) What is distant hybridization?
 - (f) What is secondary origin of plants?
 - (g) What is polygenic inheritance?
 - (h) Name two national institutes working in plant breeding programme.
2. Answer *any four* questions from the following: 5×4=20
- (a) What is quantitative trait? Explain polygenic inheritances with suitable example. 1+4=5
 - (b) State specific objects of plant breeding and discuss the significance of hybridization in plant breeding. 3+2=5
 - (c) How does spontaneous mutation occur? Differentiate Transition and Transversion. 3+2=5
 - (d) Define heterosis. Explain the genetic basis of heterosis breeding of crops. 1+4=5
 - (e) What is segmental allopolyploidy? Write the significance of polyploidy. 2+3=5
 - (f) Define Pure line. Describe the stages of pure line selection for the improvement of Crop plants. 1+4=5
3. Answer *any one* question from the following: 10×1=10
- (a) Comment on various types of selection methods employed in Cross Pollinated Crops. Briefly discuss the application of allopolyploidy. 4+6=10
 - (b) Describe the impact of plant biotechnology in Crop improvement. What do you mean by molecular breeding? 8+2=10

SP-V/BOT/501/DSE-1A/19

B.Sc. 5th Semester (Programme) Examination, 2019-20

BOTANY

Course ID : 51318

Course Code : SPBOT/501/DSE-1A

Course Title: Cell and Molecular Biology

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

যে কোনো পাঁচটি প্রশ্নের উত্তর দাও :

(a) What is Resolving Power?

রিজলভিং পাওয়ার কী?

(b) Write the full name of SEM and TEM.

SEM এবং TEM-এর পুরো নাম লেখো।

(c) What is 'cell theory'?

'কোষ তত্ত্ব' কী?

(d) What is the function of lysosome?

লাইসোজোমের কাজ কী?

(e) Write the different phases of cell cycle.

কোষচক্রের বিভিন্ন দশাগুলির নাম লেখো।

(f) What is chromatin?

ক্রোমাটিন কী?

(g) Write two main differences between DNA and RNA.

DNA ও RNA-এর প্রধান দুটি পার্থক্য লেখো।

(h) Write the role of t-RNA?

t-RNA-এর কাজ কী?

2. Answer any two questions:

5×2=10

যে কোনো দুটি প্রশ্নের উত্তর দাও :

(a) Describe the structure of Ribosome. What is the difference between euchromatin and heterochromatin? 3+2=5

রাইবোজোমের গঠন বর্ণনা করো। ইউক্রোমাটিন ও হেটেরোক্রোমাটিনের মধ্যে পার্থক্য কী?

(b) Describe the Fluid Mosaic Model of plasmamembrane. What is meant by selective permeability? 4+1=5

কোষপর্দার 'ফ্লুইড মোজাইক মডেল' বর্ণনা করো। প্রভেদক অর্ধভেদ্য বলতে কী বোঝায়?

(c) What is genetic code? Write the characters of it. 4+1=5

জেনেটিক কোড কী? এর বৈশিষ্ট্যগুলি লেখো।

(d) What is 'operon'? Write the components of 'lac' operon with diagram. 1+4=5

'ওপেরন' কী? চিত্রের সাহায্যে 'ল্যাক' ওপেরনের উপাদানগুলি লেখো।

3. Answer any one question:

10×1=10

যে কোনো একটি প্রশ্নের উত্তর দাও :

(a) Describe the structure and function of mitochondria with diagram. 7+3=10

চিত্রের সাহায্যে মাইটোকন্ড্রিয়ার গঠন ও কার্য বর্ণনা করো।

(b) Describe the structure of double stranded DNA with diagram. What is meant by semiconservative DNA replication?

চিত্রসহ দ্বিতন্ত্রী DNA-এর গঠন বর্ণনা করো। অর্ধরক্ষণশীল DNA সংশ্লেষ বলতে কী বোঝায়?

SP-V/BOT/501/DSE-1A(PR)/19

B.Sc. 5th Semester (Programme) Examination, 2019-20**BOTANY****Course ID : 51328****Course Code : SPBOT/501/DSE-1A****Course Title: Cell and Molecular Biology (Practical)****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.*

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

1. Find out the percentage of plasmolysed cell from supplied plant material and solution.

Procedure-2, Result-3, Comment-2

7

2. Identify with reason:

A and B

Reason 1, identification $\frac{1}{2}$

$1\frac{1}{2}+1\frac{1}{2}=3$

কারণসহ শনাক্ত করো :

A এবং B

কারণ = 1, সনাক্তকরণ = $\frac{1}{2}$

3. Practical Records

2

ব্যবহারিক খাতা

4. Viva Voce

3

মৌখিক প্রশ্নাবলী

*SP-V/BOT/501/DSE-IA(PRI)/19***B.Sc. 5th Semester (Programme) Examination, 2019-20****BOTANY****Course ID : 51328****Course Code : BOT-501-DSE-IA**

Course Title: Cell and Molecular Biology (Practical)

Instruction to the Examiner.

1. Specimen — Fresh plant material (leaf). 7
Solution — 1 M sucrose solution, distilled water.
Procedure-2, Result-3, Comment-2.
2. A and B 1½+1½=3
 - (a) Any stage of mitotic cell division.
 - (b) Any stage of meiotic cell division.
 - (c) Polyent chromosome. } Photographs
 - (d) Lampbrush chromosome }
Reason - 1, Each identification - ½
3. Laboratory Notebook 2
Credit should be given to those candidates who have regular signature of the teacher in their practical notebook.
4. Viva Voce 3
Minimum 5 questions to be asked within the limit of syllabus.

General Instruction

1. Twenty (20) examinees should be examined in a batch.
2. Working out materials should be given in accordance with practical syllabus.
3. Key to the materials supplied should be submitted along with the examined answer scripts.
4. Full name, specimen signature and address (with Mobile Tel. No.) of Examiners (both internal and external) should be given in the 'key' submitted.
5. Examined answer-scripts and 'key' should be sent directly to the Controller of Examinations Section within 7 (seven) days after completion of examination.

SP-V/BOT/504/SEC-3/19

B.Sc. 5th Semester (Programme) Examination, 2019-20

BOTANY

Course ID : 51310

Course Code : BOT-504-SEC-3

Course Title: Medicinal Botany

Time: 2 Hours

Full Marks: 40

*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 of the following:

2×5=10

যে কোনো দুটি প্রশ্নের উত্তর দাও :

- (a) What do you mean by 'Folk-medicine'?
'ফোক্ মেডিসিন (লোক ঔষধ) বলতে কী বোঝো?
- (b) Write down the full form of AYUSH.
AYUSH-এর পুরো নাম লেখো।
- (c) Define 'Endemic plant' with an example.
'এনডেমিক উদ্ভিদ'-এর সংজ্ঞা লেখো, একটি উদাহরণ দাও।
- (d) Name any two 'Botanical Garden' in India.
ভারতে অবস্থিত দুটি 'বোটানিক্যাল গার্ডেন' এর নাম লেখো।
- (e) What is 'Unani System of medicine'?
'উনানী সিস্টেম অফ মেডিসিন বলতে কী বোঝো?
- (f) Define 'Medicinal Plant'.
ভেষজ উদ্ভিদের সংজ্ঞা লেখো।
- (g) Name four 'ethnic communities' of India.
ভারতে বসবাসকারী চারটি 'এথনিক কমিউনিটিস' (আদি সম্প্রদায়)-এর নাম লেখো।
- (h) What do you mean by Biosphere reserve?
বায়োস্ফিয়ার রিজার্ভ (সংরক্ষিত জীবমণ্ডল) বলতে কী বোঝো?

2. Answer *any four* questions of the following:

5×4=20

নিম্নলিখিত যে কোনো চারটি প্রশ্নের উত্তর দাও :

(a) What do you mean by 'Ex-situ conservation'? What are the process of 'Ex-situ conservation'?

1+4=5

‘এক্স-সিটু সংরক্ষণ বলতে কী বোঝায়? ‘এক্স-সিটু’ সংরক্ষণের পদ্ধতিগুলি কী কী?

(b) Write down the importance of medicinal plant.

5

ভেষজ উদ্ভিদের গুরুত্ব লেখো।

(c) Write a short note on 'sacred grove'.

5

স্যাকরিড গ্রভ (পবিত্র খণ্ডভূমি) সম্পর্কে সংক্ষিপ্ত বিবরণ লেখো।

(d) What is Ayurveda? What are the main classical reference books of Ayurveda? 3+2=5

আয়ুর্বেদ কী? আয়ুর্বেদ সংক্রান্ত প্রাচীন গ্রন্থগুলির নাম লেখো।

(e) What is a biodiversity hotspot? How many biodiversity hotspot are there in India? Write down their name. 2+1+2=5

জীববৈচিত্র্যের প্রাচুর্য কেন্দ্র কী? ভারতবর্ষে কতগুলি জীববৈচিত্র্যের প্রাচুর্য কেন্দ্র আছে? সেগুলির নাম কী?

(f) Write down about different process of medicinal plant propagation in brief. 5

ভেষজ উদ্ভিদের বংশবিস্তারের বিভিন্ন পদ্ধতি সংক্ষেপে আলোচনা করো।

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

10×1=10

নিম্নলিখিত যে কোনো একটি প্রশ্নের উত্তর দাও :

(a) What is an indigenous system of medicines? Describe in a brief about different indigenous system of medicine found in India. 2+8=10

ইন্ডিজেনাস (স্বদেশজাত) ঔষধ পদ্ধতি বলতে কী বোঝায়? ভারতবর্ষে প্রচলিত বিভিন্ন ধরনের স্বদেশজাত ঔষধ ব্যবস্থার সংক্ষিপ্ত বিবরণ দাও।

(b) What do you mean by Ethnobotany? Describe in a brief about the different branches of ethnobotany. 2+8=10

এথনোবটানী (জাতি-উদ্ভিদবিদ্যা) বলতে কী বোঝায়? এথনোবটানীর বিভিন্ন শাখাগুলি সম্পর্কে সংক্ষেপে আলোচনা করো।

B.Sc. 5th Semester (Honours) Examination, 2019-20**BOTANY****Course ID : 51311****Course Code : SH/BOT/501/C-11**

Course Title: Reproductive Biology of Angiosperm and Palynology

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
- (a) What is monosporic embryo sac?
 - (b) What is forensic palynology?
 - (c) What do you mean by double fertilization?
 - (d) Define 'zonotreme' type of pollen.
 - (e) What is Polyembryony?
 - (f) Distinguish between autogamy and allogamy.
 - (g) What are pollinia?
 - (h) What do you mean by para-sexual hybridization?
2. Answer *any two* of the following: 5×2=10
- (a) Briefly describe the pollen wall structure. What is polyad? 4+1=5
 - (b) Define Xenogamy. Describe different contrivances for self pollination. 2+3=5
 - (c) What is callose? Briefly describe the significance of callose deposition. 2+3=5
 - (d) Who first coined the term 'Apomixis'? What are the different types of Apomixis? 1+4=5
3. Answer *any one* of the following: 10×1=10
- (a) Discuss in detail the different types of endosperm development with suitable example. What is anatropous ovule? 8+2=10
 - (b) Briefly describe the process of microsporogenesis with suitable diagram. What is NPC system of classification in pollen? 7+3=10
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B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

BOTANY

Course ID : 51321

Course Code : SHBOT/501/C-11

Course Title: Reproductive Biology and Angiosperms and Palynology

Time: 2 Hours

Full Marks: 15

The figure in the right hand side margin indicate marks.

1. Make a temporary preparation of specimen-‘A’. Draw, label and comment on its morphological features of the supplied specimen. 6
(Slide preparation-2, Drawing and Labelling-2, Comment-2)
 2. Identify with reasons specimens ‘B’ and ‘C’. 2×2=4
(Reason-1½, Identification-½)
 3. Practical Notebook 2
 4. Viva Voce 3
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