

B.Sc. 1st Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 12624

Course Code : SH/ZOO/103/GE-I

Course Title : Animal Diversity Lab

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. Identify the specimen (A, B, C) as provided with reasons. ($\frac{1}{2}+1\frac{1}{2}$) \times 3=6
 2. Dissect out the specimen provided. Draw a labelled diagram of the same. 3+1+1=5
 3. Prepare a temporary mount of the specimen provided: Draw and label it. (1+ $\frac{1}{2}$ + $\frac{1}{2}$)=2
 4. Submit the laboratory Notebook. 2
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ZOOLOGY

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Course Title : Animal Diversity Lab

Instructions to the examiners.

1. Necessary arrangements may please be made before the date of commencement of practical examination.
2. For Question No. 1, two specimens are to be selected from Item-1 and one from Item-2 of the syllabus. (Scientific name (½ mark), systematic position (½ mark) and characters (1 mark)). For T.S ½ mark, for identification and ½ marks for characters.

For Question No. 1, separate loose sheets should be supplied to the candidates and should be collected within scheduled time.

The loose sheets are to be attached with the main answer scripts after evaluation and duly signed by the examiners.
3. For Question No. 2, specimens are to be supplied to the examinee as per Item 4 of the syllabus.

Examinees are requested to write the selected dissection for the students on the writing board and to instruct the examinees to write the allotted dissection on the first right page of the answer script and duly signed.

Examinees have to draw the labelled diagram of the dissection. (dissection 3 marks, for drawing 1 mark and for labelling 1 mark)
4. For Question No. 3, specimens are to be supplied to the examinee as per item 3 of the syllabus.
5. Full name and signature along with address for the examiners should be enclosed with the answer scripts.
6. After completion of examination the answer scripts should be enclosed in a sealed packet containing top sheet. Award list should be submitted separately.

SP-I/ZOO/101/C-2/(PR)/19

B.Sc. 1st Semester (Programme) Practical Examination, 2019-20

ZOOLOGY

Course ID : 12628

Course Code : SP/ZOO/101/C-1A

Course Title : Animal Diversity Lab

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.*

Answer all questions.

1. Identify the specimens marked A, B, C, D, E and F on spot.

[Generic name— ½, Systematic Position— 1]

1½×6=9

2. Submission of a project report

4

3. Submission of laboratory notebook

2

B.Sc. 1st Semester (Programme) Practical Examination, 2019-20

ZOOLOGY

Course ID : 12628

Course Code : SP/ZOO/101/C-1A

Instructions to the examiners

1. Necessary arrangements may please be made before the date of commencement of practical examination.
2. For question No. 1 , six specimens are to be selected from the entire syllabus, three of which will be from non-chordate and three from chordate. Examiners are requested to select specimen A from Protozoa/Porifera/Cnidaria, specimen B from Platyhelminthes/Nematoda/Annelida, specimen C from Arthropoda/Mollusca/Echinodermata, specimen D from protochordata/Agnatha, specimen E from Pisces/Amphibia and specimen F from Reptilia/Mammalia.
3. During assessment of laboratory notebook due credit must be given to examinee who has covered the syllabus on a regular basis.
4. Only the examiner and laboratory personnel's should be allowed to enter the laboratory during examination.
5. Full name and signature together with address of the examiners should be enclosed with the answer scripts.
6. After completion of examination the answer scripts should be enclosed in a sealed packet containing top sheet.

B.Sc. 1st Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 12621

Course Code : SH/ZOO/101/C-1

Instructions to the examiners.

1. For question No.1: Three (03) specimens are to be selected, one from each of item 1a, 1b, 1c as prescribed in the syllabus.
2. For question No. 2: Select any one from item no. 2 and 3 for staining /mounting.
3. For question No. 3: Laboratory notebook must cover whole syllabus and due credit should be extended to the candidates for scientific drawing and labelling as well as the endorsement by the concerned teachers.
4. A key to the identification of question No. 1 and 2 to be prepared and duly signed by the examiners for each batch and should be enclosed along with the evaluated answer scripts and should be send to the convener within 5 days after completion of examination.
5. No marks should be awarded for writing common name of specimen/spelling mistake/drawing without labelling/writing technical/ scientific terms in other than English.
6. Standard procedure for smear preparation of the gut content and standard staining procedure should be given due credit.
7. During examination only the concerned persons are to be allowed in the examination hall.
8. For any discrepancy/anomaly/query, examiners are requested to contact the concerned convener on urgent basis.
9. On completion of the evaluation process the answer scripts are to be enclosed in packets with top sheet containing details of the examinees.

SH-I/ZOO/102/C-2(P)/19

B.Sc. 1st Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 12622

Course Code : SH/ZOO/102/C-2

Course Title : Perspectives in Ecology Lab.

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. Determine the Shannon–Weiner diversity index of the given natural/hypothetical community. 5
 2. Estimate the amount of Free CO₂ of the water sample collected by you and write the principle and result.
Principle–2 marks, Result– 3 marks. 5
 3. Submit a report on the visit as mentioned in the syllabus. 3
Submission–2 marks, viva on submitted report–1 mark.
 4. Submission of Laboratory Notebook. 2
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B.Sc. 1st Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 12622

Course Code : SH/ZOO/102/C-2

Course Title: Perspectives in Ecology Lab

Instructions to the examiners.

1. For question No.1 examiners are requested to prepare cards (each for one problem) for determination of Shannon-Weiner diversity index, provided in the form of booklet. Each examinee should write the answer of this question on a separate answer script duly signed by one of the examiner. Please collect the cards from the examinees for further use.
2. For Question No. 2 examiners are requested to collect the water sample from tap water for further procedure.
3. For viva in Question No. 3 examiners are requested to ask at least four questions exclusively on the submitted report.
4. For question No. 4 regularity and neatness with scientific approach to be given due credit.

B.Sc. 1st Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 12622

Course Code : SH/ZOOH/102/C-2

Course Title: Perspectives in Ecology Lab

CARD COMBINATION BOOKLET

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- A.** Composition and count data of some important birds in a freshwater wetland of Purulia district are given below. Determine the Shannon-Weiner diversity index of water bird community in the wetland.

Species	No. of Samples
1. Open bill stork	42
2. Lesser adjutant stork	36
3. Common Kingfisher	23
4. River Tern	72
5. Great Cormorant	45

B. Ichthyofaunal samples of the following five families have been collected from River Gandheswari at a given time. Calculate the Shannon-Weiner diversity index.

Family	No. of Samples
1. Clupei formes	80
2. Perci formes	250
3. Siluri formes	190
4. Cyprini formes	540
5. Osteoglossi formes	16

C. Composition and count data of some important water birds in a freshwater wetland of Bankura district are given below. Determine the Shannon-Weiner diversity index of water bird community in the wetland.

Species	No. of Samples
1. Little Grebe	26
2. Little Cormorant	19
3. Pond Heron	15
4. Cattle Egret	16
5. Cotton Teal	45

D. Determine the Shannon-Weiner diversity index of the following hypothetical community.

Species:	A	B	C	D	E
No. of Samples:	24	41	32	34	10

E. Composition and count data of some important birds in a freshwater wetland of Purulia district are given below. Determine the Shannon-Weiner diversity index of water bird community of the wetland.

Species	No. of Samples
1. Open bill stork	23
2. Lesser adjutant stork	29
3. Common Kingfisher	53
4. River Tern	60
5. Greater Cormorant	46

F. Ichthyofaunal samples of the following five families have been collected from River Gandheswari at a given time. Calculate the Shannon-Weiner diversity index.

Family	No. of Samples
1. Clupei formes	15
2. Perci formes	600
3. Siluri formes	412
4. Cyprini formes	960
5. Osteoglossi formes	30

G. Composition and count data of some important water birds in a freshwater wetland of Bankura district are given below. Determine the Shannon-Weiner diversity index of water bird community of the wetland.

Species	No. of Samples
1. Little Grebe	10
2. Little Cormorant	12
3. Pond Heron	08
4. Cattle Egret	02
5. Cotton Teal	21

H. Determine the Shannon-Weiner diversity index of the following hypothetical community.

Species:	A	B	C	D	E
No. of Samples:	32	45	28	15	24

I. Composition and count data of some important birds in a freshwater wetland of Purulia district are given below. Determine the Shannon-Weiner diversity index of water bird community of the wetland.

Species	No. of Samples
1. Open bill stork	23
2. Lesser adjutant stork	21
3. Common Kingfisher	22
4. River Tern	40
5. Great Cormorant	35

J. Ichthyofaunal samples of the following five families have been collected from River Gandheswari at a given time. Calculate the Shannon-Weiner diversity index.

Family	No. of Samples
1. Clupei formes	14
2. Perci formes	596
3. Siluri formes	326
4. Cyprini formes	721
5. Osteoglossi formes	52

K. Composition and count data of some important birds in a freshwater wetland of Bankura district are given below. Determine the Shannon-Weinner diversity index of water bird community of the wetland.

Species	No. of Samples
1. Little Grebe	30
2. Little Cormorant	18
3. Pond Heron	03
4. Cattle Egret	05
5. Cotton Teal	14

L. Determine the Shannon-Weiner diversity index of the following hypothetical community.

Species:	A	B	C	D	E
No. of samples:	24	44	26	21	32

M. Composition and count data of some important birds in a freshwater wetland of Purulia district are given below. Determine the Shannon-Weiner diversity index of water bird community in the wetland.

Species	No. of Samples
1. Open bill stork	24
2. Lesser adjutant stork	23
3. Common Kingfisher	12
4. River Tern	42
5. Greater Cormorant	36

N. Ichthyofaunal samples of the following five families have been collected from River Gandheswari at a given time. Calculate the Shannon-Weiner diversity index.

Family	No. of Samples
1. Clupei formes	19
2. Perci formes	422
3. Siluri formes	316
4. Cyprini formes	689
5. Osteoglossi formes	42

O. Composition and count data of some important birds in a freshwater wetland of Bankura district are given below. Determine the Shannon-Weinner diversity index of water bird community in the wetland.

Species	No. of Samples
1. Little Grebe	12
2. Little Cormorant	12
3. Pond Heron	06
4. Cattle Egret	03
5. Cotton Teal	15

P. Determine the Shannon-Weiner diversity index of the following hypothetical community.

Species:	A	B	C	D	E
No. of samples:	15	22	18	20	16

SH-I/ZOO/103-GE-1/19

B.Sc. 1st Semester (Honours) Examination, 2019-20**ZOOLOGY****Course ID : 12614****Course Code : SH/ZOO/103/GE-1****Course: Animal Diversity****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:**1×5=5**

নিম্নলিখিত যে কোনো পাঁচটি প্রশ্নের উত্তর দাও :

(a) Write two characteristics of Protozoa.

Protozoa-র দুটি বৈশিষ্ট্য লেখো।

(b) What is osculum?

Osculum বলতে কী বোঝো?

(c) Define polymorphism.

পলিমরফিজম এর সংজ্ঞা দাও।

(d) Name the definitive or primary host of *Plasmodium vivax*.*Plasmodium vivax* এর মুখ্য পোষক বা নির্দিষ্ট পোষকের নাম উল্লেখ করো।

(e) Give the scientific name of one acoelomate organism.

একটি আসিলোমেট প্রাণীর বিজ্ঞানসন্মত নাম উল্লেখ করো।

(f) In which phylum compound eyes are found?

প্রাণীদের কোন পর্বে পুঞ্জাক্ষি উপস্থিত?

(g) Define metamorphosis.

রূপান্তর কাকে বলে?

(h) State the dental formula of an adult human being.

একটি প্রাপ্ত বয়স্ক মানুষের দন্তসংকেতটি লেখো?

2. Answer any two questions:

5×2=10

যে কোনো দুটি প্রশ্নের উত্তর দাও :

(a) Mention any four identifying features of class Aves. Briefly discuss the adaptation in birds for flight. 2+3=5

শ্রেণী Aves এর যে কোনো চারটি শনাক্তকারী বৈশিষ্ট্য উল্লেখ করো। পক্ষীর উড্ডয়নের জন্য প্রয়োজনীয় অভিযোজনগুলি সংক্ষেপে আলোচনা করো।

(b) Mention the differences between Urochordata and Cephalochordata stating one example from each. 4+1=5

একটি করে উদাহরণসহ Urochordata ও cephalochordata-র মধ্যে পার্থক্যগুলি উল্লেখ করো।

(c) Describe the water vascular system in starfish with suitable diagram. 3+2=5

তারামাছের জল সংবহনতন্ত্রটি চিত্র সহকারে বর্ণনা করো।

(d) What is Pearl? Name two shell-less (external shell absent) mollusc. What is the main chemical component of the molluscan shell? 1+2+2=5

মুক্ত কী? দুটি খোলকবিহীন (বহিঃখোলক) mollusc-এর নাম লেখো। Mollusc-এর খোলকের মূল রাসায়নিক উপাদানের নাম উল্লেখ করো।

3. Answer any one question:

10×1=10

নিম্নলিখিত যে কোনো একটি প্রশ্নের উত্তর দাও :

(a) State any two characters of class Nematoda. Mention the parasitic adaptations of nematodes. Write the scientific names of two nematodes. 2+6+2=10

Class (পর্ব) Nematoda-র যে কোনো দুটি সাধারণ বৈশিষ্ট্য উল্লেখ করো। Nematoda-র পরজীবী অভিযোজনের বৈশিষ্ট্যগুলি উল্লেখ করো। দুটি Nematoda-এর বিজ্ঞানসম্মত নাম লেখো।

(b) What are metameres? State the differences between catadromous and anadromous fish migration with suitable examples. Write a note on the parental care in amphibia. 2+3+2+3=10

Metameres কী? মাছের Catadromous ও Anadromous পরিযোজনের উদাহরণ সহকারে পার্থক্য লেখো। পর্ব Amphibia-র Parental care সম্পর্কে টীকা লেখো।

SP-I/ZOO/101-C-1A/19

B.Sc. 1st Semester (Programme) Examination, 2019-20**ZOOLOGY****Course ID : 12618****Course Code : SP/ZOO/101/C-1A****Course: Animal Diversity****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:****1×5=5***যে কোনো পাঁচটি প্রশ্নের উত্তর দাও :*

(a) What do you mean by metachronous rhythm?

Metachronous rhythm বলতে কী বোঝো?

(b) Distinguish between Prosopyle and Apopyle.

Prosopyle ও Apopyle-এর মধ্যে পার্থক্য উল্লেখ করো।

(c) What do you understand by monogenetic and digenetic parasites?

Monogenetic ও digenetic পরজীবী বলতে কী বোঝো?

(d) Define Torsion.

Torsion-এর সংজ্ঞা দাও।

(e) Justify the name 'Hemichordata'.

Hemichordata নামের তাৎপর্য লেখো।

(f) What is Endostyle?

Endostyle কী?

(g) Write the names of any two hormones responsible for metamorphosis in Toad.

কোনো ব্যাঙের রূপান্তরের জন্য দায়ী দুটি হরমোনের নাম লেখো।

(h) Mention the names of fifth(5th) and tenth(10th) cranial nerves of *Cavia* sp.*Cavia* sp.-এর পঞ্চম ও দশম করোটিক স্নায়ুর নাম লেখো।

2. Answer any two questions:

5×2=10

যে কোনো চারটি প্রশ্নের উত্তর দাও :

(a) Describe the structure of Septal nephridia of Earthworm with appropriate figure.

কেঁচোর Septal nephridia-এর গঠন চিত্রসহ বর্ণনা করো।

(b) Define Ommatidium. Write the functions of corpora cardiaca, corpora allata and prothoracic gland in case of metamorphosis of insects. 2+3=5

Ommatidium-এর সংজ্ঞা দাও। পতঙ্গের রূপান্তরের ক্ষেত্রে corpora cardiaca, corpora allata ও prothoracic gland-এর কাজ লেখো।

(c) What is Lantern of Aristotle? Diagrammatically represent the course of water current in the water vascular system in starfish and discuss it. 1+2+2=5

অ্যারিস্টটলের লার্ণন কী? নকশার সাহায্যে তারামাছের জলসংবহনের গতিপথ আলোচনা করো।

(d) Write about the osmoregulation process in marine teleosts.

Marine teleost মাছেদের ক্ষেত্রে Osmoregulation পদ্ধতিটি লেখো।

3. Answer any one question.

10×1=10

যে কোনো একটি প্রশ্নের উত্তর দাও :

(a) Classify phylum cnidaria upto classes (according to Rupert and Barnes, 1994) with characteristic features and give example of each class. What is polymorphism? 8+2=10

পর্ব Cnidaria-এর শ্রেণি অবধি শ্রেণি বিন্যাস করো। উপযুক্ত বৈশিষ্ট্যসহ উদাহরণ দাও প্রত্যেকটি শ্রেণির ক্ষেত্রে। polymorphism কী?

(b) Describe in brief the biting mechanism of snake. Write down four major features of volant adaptations in birds. 6+4=10

সংক্ষেপে সর্পদংশন পদ্ধতির বিবরণ দাও। পাখির উড্ডয়ন অভিযোজনের চারটি মুখ্য বৈশিষ্ট্য লেখো।

SH-I/ZOO/101/C-1/19

B.Sc. 1st Semester (Honours) Examination, 2019-20**ZOOLOGY****Course ID : 12611****Course Code : SH/ZOO/101/C-1**

Course Title : Non-Chordate-I

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 questions: 1×5=5
- Define Lagoon.
 - Why *Obelia* colony is called as “Trimorphic colony”?
 - What is “Measly Pork”?
 - Define Tautonym and give an example.
 - Why “Aquiferous system” is called as the life line of sponges?
 - What is “Laurer’s Canal”?
 - What is “Loeffler’s Syndrome”?
 - What is ‘Choanocyte’?
2. Answer *any two* of the following questions: 5×2=10
- Classify Phylum Cnidaria upto classes with suitable features and examples (according to Ruppert and Barnes, 1994).
 - Define Taxonomy. Describe the major rules of Zoological nomenclature. 2+3=5
 - Define ‘Host and Pathogen’. Give an account of the parasitic adaptations of *Taenia* with suitable diagram. (½+½+3+1)=5
 - What is Coelom? State about the embryonic origin of Coelom? Define Protostome and Deuterostome with examples. 1+2+2=5
3. Answer *any one* of the following questions: 10×1=10
- Define Monogenetic and Digenetic parasite with examples. Describe the life cycle of *Wuchereria* sp. with diagram. Name *two* pathogenic effects of such parasite. 1+1+4+2+2=10
 - Write short notes on: (*any two*) 5+5=10
 - Metagenesis
 - Atoll
 - Syconoid canal System
 - Conjugation in *Paramecium*.

B.Sc. 1st Semester (Honours) Examination, 2019-20**ZOOLOGY****Course ID : 12612****Course Code : SH/ZOO/102/C-2**

Course Title : Perspectives in Ecology

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: 1×5=5
- What do you mean by ecological pyramid?
 - What is edge effect?
 - What is vital index?
 - What is the significance of species richness of an ecosystem?
 - Define biotic potential.
 - Define 'Taxidermy'.
 - Define Net Primary Productivity (NPP).
 - Define Ecotone.
2. Answer *any two* questions: 5×2=10
- What are the basic principles of energy flow through an ecosystem? What is the significance of Y-shaped model of energy flow? What is 'Eltonian Pyramid'? 2+2+1=5
 - Compare food chain and food web. How do modular organisms differ from the unitary organisms? Give one example of each type. 2+(2+1)=5
 - What do you mean by biogeochemistry? Define residence time of nutrients in biogeochemical cycles. Draw a schematic diagram to show nitrogen cycle in biosphere. 1+1+3=5
 - Describe Lotka-Volterra equations for interspecific competition between two species. Define Gause's principle of competitive exclusion. 3+2=5
3. Answer *any one* questions: 10×1=10
- What do you mean by Pioneer Community? Describe the general process of ecological succession in a Lake ecosystem. What do you mean by epilimnion and hypolimnion. 1+7+2=10
 - Differentiate between *ex-situ* and *in-situ* conservation with examples. Name one National Park and one Wild-life Sanctuary in West Bengal. What are the full forms of IUCN and CITES. Write short note on Biosphere reserve. Name one Biosphere reserve in West Bengal. 2+2+2+3+1=10