

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
ZOOLOGY

Subject Code : 12612 **Course Code : SHZOO/102/CP-2**
Course Title : Perspectives in Ecology Lab

Full Marks : 15

Time : 2 Hours

The figures in the right hand side margin indicate marks.

Answers all questions :

1. Determine the Shannon - Weiner diversity index of the given natural / hypothetical community. 5

2. Quantify the amount of free CO₂ of the water sample collected by you and write the principle and procedure of the method adopted by you. 6
Principle - 1½ marks. Procedure - 3 marks. Result - 1½ marks.

3. Submit a report on the visit as mentioned in the syllabus. 4

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Card Combination Booklet

- A. Composition and count data of some important waterbirds in a fresh water wetlands of Bankura district is given below. Determine the Shannon-weiner diversity index of waterbird community of the wetlands.

| Species | No. of samples |
|---------------------|----------------|
| 1. Little Grebe | 25 |
| 2. Little Cormorant | 21 |
| 3. Pond Heron | 12 |
| 4. Cattle Egret | 18 |
| 5. Cotton Teal | 50 |

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

| Species - | A | B | C | D | E |
|----------------|----|----|----|----|----|
| No. of samples | 24 | 42 | 28 | 36 | 10 |

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

| Family | No. of samples |
|----------------------|----------------|
| 1. Clupeiformes | 77 |
| 2. Perciformes | 285 |
| 3. Siluriformes | 189 |
| 4. Cypriniformes | 640 |
| 5. Osteoglossiformes | 14 |

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

| Species - | A | B | C | D | E |
|----------------|----|----|----|----|----|
| No. of samples | 36 | 42 | 29 | 16 | 21 |

- E. Composition and count data of some important waterbirds in a freshwater wetlands of Bankura district is given below. Determine the Shannon - Weiner diversity index of waterbird community of the wetlands.

| Specus | No. of samples |
|---------------------|----------------|
| 1. Little Grebe | 07 |
| 2. Little Cormorant | 15 |
| 3. Pond Heron | 06 |
| 4. Cattle Egret | 03 |
| 5. Cotton Teal | 27 |

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

| Species - | A | B | C | D | E |
|----------------|----|----|----|----|----|
| No. of samples | 25 | 46 | 28 | 22 | 30 |

- G. Determine the Shannon - Weiner diversity index of the following samples collected from a grassland ecosystem.

| Species | No. of samples |
|---|----------------|
| 1. Orthoptera (green with red legs) | 06 |
| 2. Orgthoptera (Brown with yellow stripe) | 05 |
| 3. Lepidoptera (large blue) | 01 |
| 4. Lepidoptera (small blue) | 03 |
| 5. Coleoptera (red and blue) | 12 |

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

| Species - | A | B | C | D | E |
|----------------|----|----|----|----|----|
| No. of samples | 20 | 19 | 22 | 18 | 16 |

- I. Ichthyofaunal samples of the following five families have been collected from river Rupnarayan at a given time. Calculate the Shannon - Weiner diversity index.

| Family | No. of samples |
|----------------------|----------------|
| 1. Clupeiformes | 12 |
| 2. Perciformes | 684 |
| 3. Siluriformes | 402 |
| 4. Cypriniformes | 1084 |
| 5. Osteoglossiformes | 262 |

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

| | | | | | |
|----------------|----|----|----|----|----|
| Species - | A | B | C | D | E |
| No. of samples | 48 | 62 | 82 | 91 | 24 |

K. Determine the Shannon - Weiner diversity index of the following samples collected from a grassland ecosystem.

| Species | No. of samples |
|---|----------------|
| 1. Hymenoptera (black) | 12 |
| 2. Hymenoptera (purple) | 21 |
| 3. Hymenoptera (striped) | 05 |
| 4. Orthoptera (green with red legs) | 25 |
| 5. Orthoptera (brown with yellow stripes) | 02 |
| 6. Lepidoptera (Large, blue) | 17 |
| 7. Lepidoptera (small, blue) | 09 |

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

| | | | | | |
|----------------|----|----|----|----|----|
| Species - | A | B | C | D | E |
| No. of samples | 16 | 20 | 18 | 19 | 15 |

M. Composition and count data of some important waterbirds in a freshwater wetlands of Bankura district is given below. Determine the Shannon - Weiner diversity index of waterbird community of the wetlands.

| Species | No. of samples |
|---------------------|----------------|
| 1. Little Grebe | 31 |
| 2. Little Cormorant | 18 |
| 3. Pond Heron | 02 |
| 4. Cattle Egret | 06 |
| 5. Cotton Teal | 15 |

N. Determine the Shannon - Weiner diversity index of the following hypothetical Community.

| | | | | | |
|----------------|----|-----|----|-----|----|
| Species - | A | B | C | D | E |
| No. of samples | 20 | 165 | 20 | 300 | 20 |

- O. Composition and count data of some important waterbirds in a freshwater wetland of Bankura district is given below. Determine the Shannon - Weiner diversity index of waterbird community of the wetlands.

| Species | No. of samples |
|---------------------|----------------|
| 1. Little Grebe | 16 |
| 2. Little Cormorant | 10 |
| 3. Pond Heron | 05 |
| 4. Cattle Egret | 02 |
| 5. Cotton Teal | 17 |

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

| Species - | A | B | C | D | E |
|----------------|----|----|----|----|----|
| No. of samples | 13 | 40 | 68 | 92 | 65 |

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
ZOOLOGY

Subject Code : 12603

Course Code : SHZOO/103/GE-1

Course Title : Animal Diversity

Full Marks : 25

Time : 1 hr. 15 min.

The figures in the right hand side margin indicate marks.

১. নিম্নলিখিত যে কোন পাঁচটি প্রশ্নের উত্তর দাও : ১ x ৫ = ৫
- ক) Malaria ঘটায় এরূপ একটি পরজীবীর বিজ্ঞান সম্মত নাম লিখ। ১
- খ) সিউডোসিলোম এর সংজ্ঞা দাও। ১
- গ) পুং ও স্ত্রী Ascaris কে কিভাবে পৃথক করবে? ১
- ঘ) কোন অমেরুদণ্ডী প্রাণীকে “Natural Tillers of Soil” বলে। ১
- ঙ) দুটি Social insects -র বৈজ্ঞানিক নাম লিখ। ১
- চ) কোন প্রাণীদের ‘Box replile’ বলে। ১
- ছ) Patagia বলতে কি বোঝ। ১
- জ) একটি পদবিহীন উভচর প্রাণীর বৈজ্ঞানিক নাম লিখ। ১
২. নিম্নলিখিত যে কোন চারটি প্রশ্নের উত্তর দাও : ২ x ৫ = ১০
- ক) খেচর অভিযোজনের সংজ্ঞা দাও। খেচর অভিযোজনজনিত চারটি বৈশিষ্ট্যের উল্লেখ কর। ১+৪=৫
- খ) কোন প্রাণীদের Pouched mammals বলে? এই ধরনের প্রাণীর ৪টি বৈশিষ্ট্য লেখ। ১+৪=৫
- গ) তারামাছের জলসংবহনতন্ত্র চিত্রসহকারে বর্ণনা কর। ২+৩=৫
- ঘ) Diadromous পরিযান বলতে কি বোঝ? পরিযায়ী মাছ কিভাবে Osmoregulation সমস্যার সমাধান করে। ২+৩=৫
৩. নিম্নলিখিত যে কোন একটি প্রশ্নের উত্তর লেখ : ১ x ১০ = ১০
- ক) উভচর প্রাণীর Parental care সম্পর্কে লেখ। Parental care এর তাৎপর্য উল্লেখ কর। ৮+২=১০
- খ) উপযুক্ত চিত্র সহকারে *Plasmodium vivax* এর exo-erythrocytic schizogony and erythrocytic schizogony চক্রের বর্ণনা দাও। (১৫+২৫)+(২+৪)=১০

1. Answer any five questions : 1 x 5 = 5

- a) Give the scientific name of a malaria parasite. 1
- b) Define pseudocoelom. 1
- c) How would you distinguish the male and female *Ascaris*. 1
- d) Which invertebrate is known as “Natural Tillers of Soil”? 1
- e) Give the scientific names of two social insects. 1
- f) Which animal is known as Box reptile? 1
- g) What do you understand by the term “Patagia”? 1
- h) Give the scientific name of a limbless amphibia. 1

2. Answer any two questions : 5 x 2 = 10

- a) Define volant adaptation. Mention four features of such adaptation. 1+4=5
- b) Which animals are called “Pouched mammals”? Give four features of such animals. 1+4=5
- c) Write a note on water vascular system of starfish with suitable diagram. 2+3=5
- d) What do you mean by diadromous migration? How does migratory teleost solves the problem of osmo regulation. 1+4=5

3. Answer any one question : 1 x 10 = 10

- a) Give an account of parental care in Amphibia. Mention the significance of parental care. 8+2=10
- b) Describe exo-erythrocytic schizogony and erythrocytic schizogony of *Plasmodium vivax* with suitable diagram. (1½+2½)+(2+4)=10

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
ZOOLOGY

Subject Code : 12611 Course Code : SHZOO/101/CP-1
Course Title : Non- Chordates I Lab

Full Marks : 15

Time : 1 hr. 15 min.

The figures in the right hand side margin indicate marks.

Answer all questions :

1. Identify the Whole mount preparation as provided (A & B).
Write down the scientific name and systematic position.
($\frac{1}{2} + \frac{1}{2}$) x2
2. Identify the specimens as provided (A, B & C) with reasons.
($1\frac{1}{2} + 1\frac{1}{2}$) + 3 = 6
3. Identify the specimen as provided and comment on its pathogenicity.
1 + 1 = 2
4. Make a smear preparation of the gut content of cockroach. Stain the preparation and identify any protozoan species. 1 + 1 + 1 = 3
5. Submission of laboratory note book. 2

BANKURA UNIVERSITY
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ZOOLOGY

Subject Code : 12602 Course Code : SHZOO/102/CT 2
Course Title : Perspectives in Ecology

Full Marks : 25

Time : 1 hr. 15 min.

The figures in the right hand side margin indicate marks.

1. Answer any five questions : 1 x 5 = 5

- a) What is edge effect?
- b) Define keystone species.
- c) Define synecology.
- d) State Leibig's Law of Minimum.
- e) Define biotic potential.
- f) Give the full form of CITES .
- g) What is metapopulation.
- h) What do you understand by ecological pyramid.

2. Answer any two questions : 5 x 2 = 10

- a) What is human modified ecosystem? Mention its characteristics. 1+4=5
- b) What is food chain? Mention the significance of Y-shaped food chain and linear food chain. 1+4=5
- c) Describe various types of *ex-situ* conservation with examples.
- d) Describe the Lotka - Volterra equation with suitable illustration. 3+2=5

3. Answer any one question : 10 x 1 = 10

- a) State the difference between population and community. Discuss the population-regulating factors in light of recent studies. 2+8
- b) Define biogeochemical cycle. Describe the process of nitrogen cycle in the environment. 2+8

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
ZOOLOGY

Subject Code : 12601 Course Code : SHZOO/101/CT 1
Course Title : Non - Chordates I

Full Marks : 25

Time : 1 hr. 15 min.

The figures in the right hand side margin indicate marks.

- 1. Answer any five questions : 1 x 5 = 5**
- a) What is holotype?
 - b) State a function of kinetochore.
 - c) What are choanocytes?
 - d) What are gravid proglotids?
 - e) Mention one characteristic feature of parasitic platyhelminthes.
 - f) Write the significance of cnidocyte.
 - g) What are dactylozooids.
 - h) Write scientific names of 'Portuguese man of war' and sea pen.
- 2. Answer any two questions : 5 x 2 = 10**
- a) What are megascleres? Write a note on different types of megascleres found in sponges with diagrams. 1+4=5
 - b) Give a comparative account of leuconoid and rhagon types of canal systems. 5
 - c) Describe the sporogony of *Plasmodium vivax* with a suitable diagram. 5
 - d) What is coral? Mention different types of coral reefs and comment on their conservation. 1+3+1
- 3. Answer any one question : 10 x 1 = 10**
- a) Describe with diagram the process of conjugation in *Paramoecium* sp. 10
 - b) Describe life cycle of *Ascaris lumbricoides* and comment on its pathogenicity. 8+2=10

BANKURA UNIVERSITY
B. Sc. Semester I (Programme) Examination 2017
ZOOLOGY

Subject Code : 12604

Course Code : UGP/SC/101/C-1A

Course Title : Invertebrate - I

Full Marks : 25

Time : 1 hr. 15 min.

The figures in the right hand side margin indicate marks.

১. যে কোন পাঁচটি প্রশ্নের উত্তর দাও। ৫ × ১ = ৫
- ক) Taxonomy-র সংজ্ঞা দাও।
- খ) আমাশয় রোগ সৃষ্টিকারী প্রাণীর বিজ্ঞান সম্মত নাম লেখ।
- গ) পর্ব 'পরিফেরা'র একটি বৈশিষ্ট্যের উল্লেখ কর।
- ঘ) ওবেলিয়া কোন শ্রেণীর অন্তর্গত?
- ঙ) 'Ciliophora'র একটি বৈশিষ্ট্যের উল্লেখ কর।
- চ) 'Sporogony' বলতে কি বোঝ?
- ছ) 'Filariasis' সৃষ্টিকারী প্রাণীটির বিজ্ঞান সম্মত নাম লেখ।
- জ) 'Larva'র সংজ্ঞা দাও।
২. যে কোন দুটি প্রশ্নের উত্তর দাও। ২ × ৫ = ১০
- ক) পর্ব 'Cnidaria'র পাঁচটি বৈশিষ্ট্য উল্লেখ কর।
- খ) 'Obelia'র Metagenesis সংক্ষেপে বর্ণনা কর।
- গ) Entamoeba histolytica র জীবনচক্রের বর্ণনা দাও।
- ঘ) 'Sponge' এর 'Rhagon' প্রকৃতির নালিকাতন্ত্রের বর্ণনা দাও।
৩. যে কোন একটি প্রশ্নের উত্তর দাও। ১ × ১০ = ১০
- ক) 'Nematoda'র উদাহরণ সহ Class পর্যন্ত শ্রেণীবিন্যাস কর।
- খ) 'Fasciola hepatica'র জীবনচক্রের বর্ণনা দাও।

1. Answer any five questions : 5 × 1 = 5

- a) Define Taxonomy.
- b) Give the scientific name of the causative organism of Amoebiasis.
- c) Give a character of Phylum Porifera.
- d) Name the class to which *Obelia* belongs?
- e) Give one character of Ciliophora.
- f) What do you understand by Sporogony?
- g) Give the scientific name of an animal which causes Filariasis.
- h) Define larva.

2. Answer any two questions : 2 × 5 = 10

- a) Mentions any five characters of Phylum Cnidaria.
- b) Briefly describe the process of metagenesis in *Obelia*.
- c) Describe the life cycle of *Entamoeba histolytica*.
- d) Describe the rhagon type of canal system in sponges.

3. Answer any one question : 1 × 10 = 10

- a) Classify Nematoda up to classes with examples.
- b) Describe the life cycle of *Fasciola hepatica*.