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UNIVERSITY OF KERALA

M.SC. ZOOLOGY- SEMESTER I PRACTICAL EXAMINATION, JANUARY 2022

ZO 214 PRACTICAL I

Systematics, Evolutionary Biology, Biochemistry, Biophysics Instrumentation and Computer Application

Time: 4 hours **Max. Marks:75**

I (a) Identify the given Fish/Prawn/Insect down to species level using a suitable manual. Submit the dichotomous key prepared for the identification of the species for evaluation. Sketch the features of taxonomic importance.
(Identification using key-12 marks, Diagrams of taxonomic importance-3 marks)

(15 marks)

I (b) Submit the labelled specimens identified down to species level.

Insects-5nos., Fishes-5nos., Prawns-2nos., and Crabs-2nos.

(10 marks)

II. Quantitatively estimate Protein/Glucose/Glycogen/Cholesterol in the given sample.

(Principle-3 marks, Estimation-10 marks, Calculation-2 marks, Graph-5 marks, Comment- 5 marks)
(25 marks)

III. Sketch the biological specimen provided using a Camera Lucida.

(Principle-4 marks, Sketch-6 marks, Skill of the student and Neatness of the sketch-5 marks)
(15 marks)

IV. Number of different Zooplankton for two months is represented in the table given below. Draw a bar diagram using suitable software. Show the legends and data labels in the graph

Zooplankton	March 2021	November 2021
Salpa	24	45
Chaetognatha	94	121
Sagitta	54	174
Eucalanus	231	154
Calanus	124	94

(Skill of the student-2 marks, Printout-4 marks, Comment-4 marks)

(10 marks)

Examiner I

Examiner II

PR – 11A

UNIVERSITY OF KERALA

M.Sc ZOOLOGY I[st] and II[nd] SEMESTER PRACTICAL EXAMINATION NOVEMBER – 2019

Practical II Zo. 224: Advanced Physiology, Functional Anatomy, Genetics, Quantitative Analysis and Molecular Biology

Time 4 hrs. (10 am to 2 pm)

Max: 75 Marks

1. Make a suitably stained squash preparation of the salivary gland of Drosophila / Chironomous larva to show chromosomal arrangement. Sketch and label the parts and comments **25 marks**

(Isolation of the salivary gland -5 marks, Chromosome preparation -10 marks, Sketches-5 marks Comments-5 marks)

2. **(a)** Estimate the amount of DNA/RNA present in the given tissue extract using a suitable method. Comment on the principle **15 marks**

(Estimation - 5 marks, Calculation – 5 marks, Comment - 5 marks)

(b) The following data shows the birth weight of 10 babies selected randomly from Trivandrum. Calculate mean and standard deviation of the data **10 marks**

Calculation of Arithmetic Mean - 5 marks, Standard Deviation – 5marks.

Birth weight	1.7	2.5	1.9	3.1	2.0	2.7	1.8	1.9	2.3	2.8

3. Demonstrate the effect of two different concentrations of NaCl on the diameter of RBC using micrometry **25 marks**

(Principle – 5 marks, Experiment-10 marks, Tabulation and Calculation – 5 marks, Comment – 5 marks)

Name and signature of Examiners

1.

Name and signature of Skilled Assistant

2.

PR – 1A

UNIVERSITY OF KERALA

M.Sc ZOOLOGY Ist and IInd SEMESTER PRACTICAL EXAMINATION NOVEMBER – 2019

Practical I ZO. 214: Systematics and Evolutionary Biology, Biochemistry, Biophysics, Instrumentation and Computer Application

Time 4 hrs. (10 am to 2 pm) ***Max: 75 Marks***

1. (a) Identify the given Fish up to species level using a suitable manual. Prepare a dichotomous key and draw diagrams of the parts of taxonomic importance.

15 Marks

Identification with key characters -2 marks, Preparation of dichotomous key -10 marks, Sketches-3 marks)

(b) Submit neatly labeled specimens with systematic positions of the following

10 marks

(Insects – 5, Fish – 5, Prawn – 2, Crab -2)

2. Find out the pK_a value of acetic acid using standard NaOH solution by titration method.

25 marks

(Principle-5 marks, Estimation - 10 marks, Calculation and titration curve – 7 marks, Comment - 3 marks)

3. Using Camera Lucida make a neat sketch of the material provided. Write the principle involved and comment on its applications. **10 Marks**

(Sketching -5 marks, Principle-2 marks, Comment - 3 marks.)

4. The following data shows the BMI of 100 people in a housing colony. Construct a pie diagram using appropriate software and comment on **15 Marks**

Body Mass Index (Kg./m^2)	0 -18.5	18.5 - 25	25 - 30	30 - 40	Above 40
Frequency	15	48	27	6	4

(Construction of pie diagram using software – 10 marks, Print out of diagram – 2 marks, Comment – 3 marks)

Name and signature of Examiners

1.

Name and signature of Skilled Assistant

2.

PR – 1B

UNIVERSITY OF KERALA

M.Sc ZOOLOGY Ist and IInd SEMESTER PRACTICAL EXAMINATION NOVEMBER – 2019

Practical I Zo. 214: Systematics and Evolutionary Biology, Biochemistry, Biophysics, Instrumentation and Computer Application

Time 4 hrs. (10 am to 2 pm) ***Max: 75 Marks***

1. (a) Identify the given Insect down to the level of Order using a suitable manual. Prepare a dichotomous key. Sketch the features of taxonomic importance. **15 Marks**

(Identification with key characters -2 marks, Preparation of dichotomous key -10 marks, Sketches-3 marks)

(b) Submit neatly labeled specimens with systematic positions of the following **10 marks**

(Insects – 5, Fish – 5, Prawn – 2, Crab -2)

2. Estimate the amount of Glucose / Protein present in the given test solution by using appropriate procedures. **25 marks**

(Principle-3 marks, Estimation - 10 marks, Result - 2 marks, Graph / Calculation – 5 marks, Comment - 5 marks)

3. Measure the width of the given microscopic specimen using micrometer. Add a note on the principle involved in calibration. **15 marks**

(Principle-5 marks, Calibration of micrometer - 5 marks, Calculation - 5 marks.)

4. The following data shows weight (in Kg.) of 270 male students in a college. Construct a histogram using appropriate software. **10 Marks**

Weight	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
Frequency	21	80	122	30	11

(Construction of histogram using software – ~~10~~ 5 marks, Print out of diagram – 2 marks, Comment – 3 marks)

Name and signature of Examiners

1. Dr. Sheeba. S. 20/11/2019

Name and signature of Skilled Assistant

2. Dr. Maya B. Nair 20/11/19

UNIVERSITY OF KERALA

M.Sc. Zoology Semester IV Practical Examination September 2020

ZO 234: Microbiology, Biotechnology, Ecology, Immunology & Developmental Biology.

Time: 4 Hours

Maximum Marks: 75

I. (a) Analyse the quality of two milk samples provided by employing methylene blue reductase test using appropriate control. Write the principle involved and justify the reliability of the test for estimating the quality of milk (Experiment –10 marks, Principle- 2 marks, Comment- 3 marks) **Total – 15 marks**

(b) Write notes on ecological adaptation of the two organisms provided (5 marks each)

Total - 10 marks

II. Make a gram stained preparation from the bacterial culture provided. Draw a neat and labelled sketch of single bacterium. Write short note on significance of gram staining. (Preparation- 15 marks, Sketch - 5 marks, Comments – 5 marks)

Total – 25 marks

III. Estimate the primary productivity of the system provided using dark and light bottle experiment. Write the principle involved and comment on the result. (Principle - 5marks, Experiment -15 marks, Calculations -3 marks, Comment – 2 marks) **Total – 25 marks**

Name and Signature of Examiners with date

1.....

2.....

EB- Ib

M.Sc. Zoology 4th Semester Practical Examination October 2019

ENVIRONMENTAL BIOLOGY

(Practical I - ZO 243: Pollution Biology and Environmental Physiology)

Time 4 hours Maximum marks: 75

I. (a). Submit the Field Study Report. **Total - 10 marks.**

(b). Determine the soil pH of three soil samples provided. Comment on the results. (Experiment – 10 marks; Comment - 5 marks).

Total - 15 marks

II. Determine the effect of pollution on oxygen consumption of the fish provided. Write the principle involved and comment on the results. (Principle - 5 marks: Experiment – 10 marks: Results and Calculation – 5 marks: Comment – 5 marks) **Total - 25 marks**

III. Estimate the organic carbon in the soil sample provided. Write down the principle and comment on the results. (Principle – 5 marks: Experiment - 10 marks: Results – 5 marks: Comment – 5 marks)

Total - 25 marks

Name and Signature of Examiners

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2.....

III b

M.Sc. Zoology 4th Semester Practical Examination October 2019

ZO 234: Microbiology, Biotechnology, Ecology,

Immunology & Developmental Biology

Time 4 hours Maximum Marks: 75

I. Assess the quality of the milk samples provided (two samples) by employing methylene blue reductase test. Write the Principle involved and comment on the results. (Experiment - 15 marks; Principle – 5 marks: Comment – 5 marks.) **Total 25 marks**

II. Mount five planktonic organisms from the sample provided. Identify and make an estimation of organisms/litre of the plankton concentrate. Draw a Pie diagram of the estimate and comment on the results. (Mounting and Identification – 5 marks: Estimation – 10 marks; Pie diagram- 5 marks; Comment- 5 marks.) **Total 25 marks**

III. Isolate the chick embryo from incubated egg and stain it with suitable vital dye. Determine the age and giving reasons. (Preparation - 15 marks: sketch and label- 5 marks: determination of age with reasons – 5 marks. **Total 25 marks**

Name and Signature of Examiners

1. Dr. Vinod P

2. Dr. Baiden V.S

Deepa Ramachandran

EB- Ib

M.Sc. Zoology 4th Semester Practical Examination November 2018.

ENVIRONMENTAL BIOLOGY

(Practical I - ZO 243: Pollution Biology and Environmental Physiology)

Time: 4 hours. Maximum marks: 75

I. (a). Submission of Field Study Report. **Total- 10 marks.**

(b). Determine the soil P^H of three soil samples provided. Comment on the results. (Experiment –10 marks; Comment - 5 marks.)

Total -15 marks.

II. Determine the effect of pollution on oxygen consumption of the fish provided. Write the principle involved and comment on the results. (Principle - 5 marks: Experiment – 10 marks: Results and Calculation – 5 marks: Comment – 5 marks.) **Total - 25 marks.**

III. Estimate the chlorine content in the water sample provided. Write down the principle and comment on the results. (Principle - 5 marks: Experiment – 10 marks : Results – 5 marks : Comment – 5 marks)

Total - 25 marks.

Name and Signature of Examiners

1. Dr. Sheeba S.

2. Dr. Deepa R. Pillai

EB- Id

M.Sc. Zoology 4th Semester Practical Examination October 2019

ENVIRONMENTAL BIOLOGY

(Practical II- ZO 244: Environmental Management)

Time 4 hours Maximum marks: **75**

I. Determine the Hardness / Salinity of the water sample provided. Write down the principle and procedure involved in the experiment and comment on it. (Principle – 5 marks: Experiment - 10 marks: Results – 5 marks: Comment – 5 marks). **Total - 25 marks**

II. **(a)** Determine the Water turbidity or p^H of three soil samples provided. Comment on the results. (Experiment – 7 marks; Results - 3 marks) **Total - 10 marks**

(b). Write a short account on the principle and working of the (1) Flame Photometer (2) p^H meter (3) Conductivity meter. (5 marks each) **Total - 15 marks**

III. Construct a Pyramid of Number from a pond collection provided. Write short notes on the ecological importance. (Construction of the pyramid – 15 marks; Results – 5 marks: Comment – 5 marks). **Total - 25 marks**

Name and Signature of Examiners

1. Dr. Kosh P M 17/10/19

2.....

PR I B

UNIVERSITY OF KERALA

M.Sc. Zoology II Semester Practical Examination November, 2016

Practical I- ZO214 Systematics, Evolutionary Biology, Biochemistry, Biophysics, Instrumentation and Computer Application

Time 4 hours **Maximum Marks: 75**

I (a) Identify and give the taxonomic position of the **Fish** provided down to species level using a suitable manual. Prepare a dichotomous key and submit for evaluation. Sketch the features of taxonomic importance. **Identification and Taxonomic position- 2 marks, Preparation of Dichotomous key-10 marks, Sketches -3 marks.** **(Total: 15 marks)**

(b). Submit neatly labelled specimens with systematic position. Comment on the methods of collection and preservation.

Prawns-2, Crabs-2, Insects-5, and Fishes-5: **Total 14 specimens -7 marks, Comment- 3 marks.** **(Total: 10 marks)**

II. Determine the **isoelectric pH** of the given amino acid by titration method. **(Principle-5 marks, Experiment-10 marks, Calculation and Graphs-7 marks, Comment-3 marks)**

OR

Find out the **pKa value of acetic acid** using standard NaOH solution by titration method. **(Principle-5 marks, Experiment-10 marks, Calculation and Titration curve-7 marks, Comment-3 marks)** **(Total: 25 marks)**

III. Using **Camera Lucida**, make a neat sketch of the material provided. Write the principle involved and comment on its applications. **(Sketching - 5 marks, Principle-2 marks, Comment- 3 marks)** **(Total 10 marks)**

IV. The following data shows the type of blood group of 288 people in a housing colony.

Blood Group	Number of persons
A	76
B	48
AB	36
O	128

Construct a **pie diagram** using the above data with appropriate software. Comment on the software used. **(Construction of Pie diagram using software- 10 marks, Print out of diagram - 2 marks, Comment- 3 marks)** **(Total: 15 marks)**

Name and Signature of Examiners

1.....

2.....

PR II B

UNIVERSITY OF KERALA

M.Sc. Zoology II Semester Practical Examination November, 2016

Practical II- ZO224: Advanced Physiology &Functional Anatomy, Genetics & Quantitative Analysis, Cell & Molecular Biology

Time 4 hours **Maximum Marks: 75**

I. Demonstrate the effect of two different concentrations of NaCl on the diameter of RBC using micrometry. **(Principle- 5 marks, Experiment- 10 marks, Tabulation and calculation- 5 marks, Comment- 5 marks).**

OR

Demonstrate the ciliary movement of a bivalve gill at three different temperatures **(Principle- 5 marks, Experiment- 10 marks, Graph- 5 marks, Comment- 5 marks)**

(Total: 25 marks)

II. Mount the mouth parts of housefly/mosquito. Comment on the correlation of mouth parts with food and feeding nature of the insect. **(Mounting of mouth parts- 7 marks, Comment- 3 marks).**

OR

Make a neatly stained preparation of fish blood. Identify any three cells, sketch and label. **(Preparation- 5 marks, Identification- 3 marks, Diagram- 2 marks).**

(Total: 10 marks)

III. Make a neat squash preparation of giant chromosome of *Drosophila/ Chironomous* larva. Comment on the genetic significance of giant chromosomes. **(Isolation of salivary gland- 5 marks, Preparation of squash- 10 marks, Diagram- 5 marks, Comment- 5 marks).**

(Total: 25 marks)

IV. Demonstrate the histochemical localization of Glycogen/ Protein in the given paraffin section. Compare the result with the control slide provided and comment on your result. **(Principle- 5 marks, Procedure- 3 marks, Histochemical localization- 5 marks, Comment- 2 marks).** 15

(Total: ~~25~~ marks)

Name and Signature of Examiners

1. Dr. Sheeba. S. 24.11.2016
2. Dr. Manju B. Nair 24/11/2016