I-6511

M.Sc. (Semester-I) Examination, 2022

ZOOLOGY

(Systematics, Biodiversity and Evolution)

Time Allowed : Three Hours

Maximum Marks : 70

Note : This question paper is divided into four sections. All sections are **compulsory**. Attempt questions as per instructions given in each section.

SECTION-A

(Objective Type Questions)

Note : Attempt **any ten** questions. Each question carries **1** mark. [10x1=10]

1.   (A)   Fill in the blanks :

(i)   "Nothing in biology make sense except in the light of evolution" was quoted by_____.

(ii)   Three domains of living kingdom are_____.

(iii) Father of taxonomy is_____.

(iv)   Formation of new species from the parental species is called_____.

(B)   Multiple Choice Questions :

(v)   The most likely sequence for the biological evolution of life is :

(a)   aerobic prokaryotes - photosynthetic prokaryotes - anaerobic prokaryotes - eukaryotes

(b)   photosynthetic prokaryotes - anaerobic prokaryotes - aerobic prokaryotes - eukaryotes

(c)   anaerobic prokaryotes - photosynthetic prokaryotes - aerobic prokaryotes - eukaryotes

(d)   aerobic prokaryotes - eukaryotes - anaerobic prokaryotes - photosynthetic prokaryotes

(vi)   Why do scientist think RNA, rather than DNA, may have been the original genetic material ?

    (a)   Most organisms on Earth use RNA as their genetic material

    (b)   The simplest life forms, viruses use RNA

    (c)   RNA is more stable than DNA

    (d)   RNA has the ability to catalyze a few simple, chemical reactions

(vii)   Who proposed 'Domain' as a category of classification ?

    (a)   Carl Woese

    (b)   Linnaeus

(c)   John Ray

(d)   Aristotle

(viii)   All of the following are believed to contribute to genomic diversity among various species, except :

(a)   gene duplication

(b)   gene transcription

(c)   horizontal gene transfer

(d)   chromosomal rearrangements

(ix)   The phytogenetic tree represents evolutionary relationship among species also called as :

(a)   genetic tree

(b)   evolutionary tree

(c)   phyletic tree

(d)   None of the above

(x) In allopatric speciation :

    (a)   populations occupy the same habitat and there is a reduction in gene flow

    (b)   populations occupy the same habitat and there is normal gene flow

    (c)   populations occupy a different habitat and there is a reduction in gene flow

    (d)   populations occupy a different habitat and there is normal gene flow

(xi) Transposons were first discovered in :

    (a)   Rice

    (b)   Mice

    (c)   Maize

    (d)   Bacteria

(xii) Which of the following is correct cronological order of human evolution ?

    (a)   H. sapiens - H. erectus - H. habilis - H. ergaster

    (b)   H. erectus - H. habilis - H. eryaster - H. sapiens

(c)   H. sapiens - H. erectus - H. ergaster - H. habilis

(d)   H. habiles - H. erectus - H. ergaster - H. sapiens

SECTION-B

(Very Short Answer Type Questions)

Note : Attempt **any five** questions. Each question carries **02** marks. (words limit 25-30)   [5x2=10]

2.   (i)   What is Neo-Darwinism ?

(ii)   Comment on role of 16 Sr-RNA in the construction of phylogenetic tree.

(iii)   Define Taxonomic Diversity.

(iv)   Define Molecular Drive.

(v)   What do you understand by Integrons ?

(vi)   What do you understand by Transposons ?

(vii)   What is Gene Duplication ?

SECTION-C

(Short Answer Type Questions)

Note : Attempt **any five** questions. Each question carries **04** marks. (250 words)   [5x4=20]

3. (i)   Write about the concept of Evolution during Post-Darwin Era.

    (ii)   Explain 'Life Originated from RNA'.

    (iii) Write approaches used in Phylogenetic tree construction using Molecular data.

    (iv)   Explain the concept of Molecular Clock.

    (v)   Explain evalution of eukaryotic cells from prokaryotic cells.

    (vi)   Write about role of systematics in Biology.

    (vii) Explain role of molecular biology in understanding evolutionary processes.

SECTION-D

(Essay Type Questions)

Note : Attempt **any three** questions. Each question carries **10** marks. (more that 500 words)   [3x10=30]

4.   (i)   Write an essay on 'From Molecules of Life'.

      (ii)   Explain the factors responsible for speciation.

      (iii)   Discuss diversification of Bacteria and Archaea.

      (iv)   Discuss evolution of Homo Sapiens.

----X----

I-1111C

M.A./M.Sc./M.Com./M.S.W./LL.M.
(Semester-I) Examination, 2022

RESEARCH METHODOLOGY & COMPUTER APPLICATION BASICS

Time Allowed : Three Hours

Maximum Marks : 70

Note : Question paper is divided into four sections. Attempt questions of all four sections as per given direction. Distribution of marks is given in each section.

प्रश्न-पत्र चार खण्डों में विभक्त है। सभी चार खण्डों के प्रश्नों के उत्तर निर्देशानुसार दीजिए। अंकों का विभाजन प्रत्येक खण्ड में दिया गया है।

SECTION-A / खण्ड-अ

(Objective Type Questions)

(वस्तुनिष्ठ प्रश्न)

I-1111C/4010   (1)   [P.T.O.]

Note : Attempt **any ten** questions. Each question carries **1** mark.

[1x10=10]

निम्न में से किन्हीं दस प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न एक अंक का है।

1.(A) True/False and Fill in the blanks :

सत्य/असत्य तथा रिक्त स्थान भरो :

(i) A person giving an interview is known as _____.

साक्षात्कार देने वाले व्यक्ति को _____ कहते हैं।

(ii) _____ is an indirect method of data collection.

डेटा संग्रह का एक अप्रत्यक्ष तरीका _____ है।

(iii) Data should be manipulated as per one's own requirement. (True / False)

आपकी आवश्यकता के अनुसार डेटा में हेरफेर किया जाना चाहिए। (सही/गलत)

(iv) Computers have the inherent capacity of logical reasoning. (True / False)

कम्प्यूटर में तार्किक तर्क की अंतर्निहित क्षमता होती है। (सही/गलत)

I-1111C/4010   (2)

(v)   MS-Word is a part of _____ package.

एमएम-वर्ड _____ पैकेज का एक भाग है।

(vi)   The ability to combine name and address is called

_____.

नाम और पता को मिलाने की क्षमता कहलाती _____ है।

(vii)   Full form of ALU is _____.

ALU का पूर्ण रूप है _____।

(viii)   An analysis can be occasionally based entirely on secondary data. (True/False)

एक विश्लेषण कभी-कभी पूरी तरह से द्वितीयक डेटा पर आधारित हो सकता है। (सही/गलत)

(B)   Choose the correct alternative :

सही विकल्प का चयन कीजिए :

(ix)   A research plan :

(a)   should be detailed

(b)   should be given to others for review

(c)   sets out the rationale for a research study

(d)   All of the above

एक शोध योजना :

    (a)   विस्तृत होनी चाहिए

    (b)   दूसरों को समीक्षा के लिए दी जानी चाहिए

    (c)   एक शोध अध्ययन के लिए तर्क निर्धारित करती है

    (d)   उपरोक्त सभी

(x)   Ctrl, Shift and Alt are called :

    (a)   Adjustment key

    (b)   Function key

    (c)   Alphanumeric key

    (d)   Modifier key

Ctrl, Shift और Alt कहलाते हैं :

    (a)   समायोजन कुंजी

    (b)   फ़ंक्शन कुंजी

    (c)   अल्फ़ान्यूमेरिक कुंजी

    (d)   संशोधक कुंजी

I-1111C/4010   (4)

(xi) The main concept behind doing research is to :

(a) Study and explore knowledge

(b) Start with a predefined and clean cut objectives

(c) Get new ideas

(d) All of the above

अनुसंधान करने के पीछे मुख्य अवधारणा है :

(a) ज्ञान का अध्ययन और अन्वेषण करें

(b) एक पूर्वनिर्धारित और साफ उद्देश्य से शुरू करना

(c) नए विचार प्राप्त करना

(d) उपरोक्त सभी

SECTION-B / खण्ड-ब

(Very Short Answer Type Questions)

(अति लघु उत्तरीय प्रश्न)

Note: Attempt **any five** questions. Each question carries 2 marks. (25-30 words) [5x2=10]

किन्हीं पाँच प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न 2 अंकों का है। (25-30 शब्द)

2   (i)   Define data.

डेटा को परिभाषित कीजिए।

(ii)   Define research.

शोध को परिभाषित कीजिए।

(iii)   Give four examples of temporal data.

कालिक आँकड़ों के चार उदाहरण दीजिए।

(iv)   What is meant by hypothesis?

परिकल्पना का क्या अर्थ है?

(v)   What is a computer hardware?

कम्प्यूटर हार्डवेयर क्या है?

(vi)   Name any four output devices.

किन्हीं चार आउटपुट उपकरणों के नाम लिखिए।

(vii) What is a computer software?

कम्प्यूटर साफ्टवेयर क्या है?

SECTION-C / खण्ड-स

(Short Answer Type Questions)

(लघु उत्तरीय प्रश्न)

Note : Attempt **any five** questions. Each question carries 4 marks. (Word limit : 250 words)   [5×4=20]

किन्हीं पाँच प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न 4 अंकों का है। (शब्द सीमा : 250 शब्द)

3   (i) Describe different types of data.

विभिन्न प्रकार के डेटा का वर्णन कीजिए।

(ii) Describe computer architecture in brief.

कम्प्यूटर आर्किटेक्चर का संक्षेप में वर्णन कीजिए।

(iii) Discuss any five components of file menu of MS-Word.

एमएस-वर्ड के फाइल मेन्यू के किन्हीं पाँच घटकों की चर्चा कीजिए।

I-1111C/4010   (7)   [P.T.O.]

(iv) Describe any five statistical functions of MS-Excel.

एमएस एक्सेल के किन्हीं पाँच सांख्यिकीय कार्यों का वर्णन कीजिए।

(v) Explain testing of hypothesis.

परिकल्पना के परीक्षण की व्याख्या कीजिए।

(vi) Discuss the importance of computer in research.

शोध में कम्प्यूटर के महत्व की विवेचना कीजिए।

(vii) What are system softwares?

सिस्टम साफ्टवेयर क्या है?

(viii) What are the different components of a research report?

शोध रिपोर्ट के विभिन्न घटक क्या हैं?

SECTION-D / खण्ड-द

(Essay Type Questions)

(निबंधात्मक प्रश्न)

I-1111C/4010   (8)

Note : Attempt **any three** questions. Each question carries 10 marks. (Word limit :**500** words)　　　[3×10=30]

किन्हीं **तीन** प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न 10 अंकों का है। (शब्द सीमा : **500** शब्द)

4. (i) Why research is essential in today's world? Discuss various types of research with suitable examples..

आज की दुनिया में शोध क्यों आवश्यक है? विभिन्न प्रकार के अनुसंधानों की उपयुक्त उदाहरण के साथ चर्चा कीजिए।

(ii) Discuss the different methods of data collection in detail.

आँकड़े एकत्र करने की विभिन्न विधियों की विस्तार से चर्चा कीजिए।

(iii) Give a detailed account on input and output devices.

इनपुट और आउटपुट डिवाइस का विस्तृत विवरण दीजिए।

(iv)   Discuss Page Setup, Mail Merge, Formatting and Tables in MS-Word.

एमएस-वर्ड में पेज सेटअप, मेल मर्ज, फार्मेटिंग और टेबल्स पर चर्चा कीजिए।

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I-6513

M.Sc. (Semester-I) Examination, 2022

ZOOLOGY

(Computational Biology, Biostatistics and Bioinformatics)

Time Allowed : Three Hours

Maximum Marks : 70

Note : Question paper is divided into four Sections. Attempt questions of all four sections as per direction. Distribution of marks is given in each section.

SECTION-A

(Objective Type Questions)

Note : Attempt **any ten** questions. Each question carries 1 mark. [10×1=10]

1. (i) Hard drive is an example of ....device.

(ii) The sum of all deviations from mean value is always ....

(iii) The full form of BLAST is..............................

(iv) MS-Word is an application software developed by (name of Company)..........................

(v) The full form of CPU is...............................

(vi) Sample size is always smaller than population size (State whether true or false)

(vii) The action "Ctrl+Z" performs which of the following function?

(a) Save

(b) Copy

(c) Undo

(d) Cut

(viii) An example of word-processing software is ....

(ix)   In case of perfectly positive correlation, the value of correlation coefficient would be:

   (a)   −1

   (b)   0

   (c)   +1

   (d)   None of the above

(x)   GenBank the nucleic acid sequence database is maintained by:

   (a)   European Molecular Biology Laboratories

   (b)   DNA Database of Japan

   (c)   Nation Center for Biotechnology Information

   (d)   Brookhaven Laboratory

(xi)   What type of database is the SwissPort?

   (a)   Protein Database

   (b)   DNA Database

(c)   Medical Database

(d)   None of the above

(xii) Monitor is an output device. (State whether true or false)

SECTION-B

(Very Short Answer Type Questions)

Note: Answer **any five** of the following questions in 25-30 words. Each question carries **2** marks.   [5×2=10]

2.   (i)   Define software.

(ii)   Define variable.

(iii)   Define gene.

(iv)   What are input devices?

(v)   What are biological databases?

(vi)   What are microarrays?

(vii)   What is meant by a programming language?

SECTION-C

(Short Answer Type Questions)

Note : Attempt **any five** questions. Answer in 250 words. Each question carries **4** marks. [5×4=20]

3.   (i)   What is meant by tabulation of data? What are the properties of a good table of data?

         (ii)   Describe secondary data with examples, also give the merits and demerits of secondary data.

         (iii)   Outline the steps involved in preparation of a pie-chart in MS-Excel.

         (iv)   Discuss data mining in brief.

         (v)   Discuss FASTA file format in brief.

         (vi)   Describe the concept of computational modelling.

         (vii)   Give a brief account on components of a computer system.

SECTION-D

(Essay Type Questions)

Note : Attempt **any three** of the following questions in 500 words. Each question carries **10** marks. [3×10=30]

4.   (i)   Discuss variables and its types in detail with appropriate examples.

(ii)   What is meant by correlation? Describe the methods to find correlation between any two variables .

(iii)   Give a detailed account on nucleic acid sequence databases.

(iv)   What is meant by molecular docking? Discuss the steps involved in generating a phylogenetic tree using PHYLIP.

----X----

SECTION-D

(Essay Type Questions)

Note : Attempt **any three** questions. Each question carries **10** marks. (more that 500 words)   [3x10=30]

4.   (i)   Write an essay on 'From Molecules of Life'.

      (ii)   Explain the factors responsible for speciation.

      (iii)   Discuss diversification of Bacteria and Archaea.

      (iv)   Discuss evolution of Homo Sapiens.

----X----

I-6512

M.Sc. (Semester-I) Examination, 2022

ZOOLOGY

(Principles of Ecology)

[Paper : Second]

Time Allowed : Three Hours

Maximum Marks : 70

Note : This question paper is divided into **four** sections. Attempt questions from all sections as per given direction. Distribution of marks is given in each section.

SECTION-A

(Objective Type Questions)

Note : Attempt **any ten** parts of this question. Each part carries **1** mark. [10x1=10]

1.   (i)   The term Ecosystem was first coined by_____.

     (ii)   Autoecology is the study of_____.

     (iii)   A population is a group of_____in a particular area.

     (iv)   Demography is the study of_____in a given area.

     (v)   The fresh and dry weight of any living organism is known as_____.

     (vi)   The Competition Exclusion principle was described by_____.

     (vii)   The association between fungus and algae is known as :

        (a)   Lichen

        (b)   Mycorrhiza

        (c)   BGA

        (d)   Algal bloom

     (viii)   Which is the Bio-indicator for pond ecosystem ?

        (a)   Frog

        (b)   Planktons

(c)   Individuals of a community

(d)   Population and their regulatory factors

(xii)   In which among the following is the highest assimilation efficiency observed ?

        (a)   Herbivores

        (b)   Carnivores

        (c)   Omnivores

        (d)   None of the above

SECTION-B

(Very Short Answer Type Questions)

Note : Attempt any five questions. Each question carries 2 marks. (Maximum word limit is 25-30 words) [5x2=10]

1.   Food web

2.   Global warming

3.   Biosphere

4.   Phylogeography

5.   Contaminants

6.   Detoxification

7.   Prey-Predator interaction

SECTION-C

(Short Answer Type Questions)

Note : Attempt **any five** questions. Each question carries **4** marks. (Maximum word limit is 250 words) [5x4=20]

1.   Bio-indicator

2.   Factors for population growth

3.   Bioremediation of chemicals

4.   Conservation genetics

5.   National Park and Sanctuaries

6.   Pesticides and other Chemicals in Agriculture

7.   Behavioural ecology

[P.T.O.]

I-6512/540   (5)

SECTION-D

(Essay Type Questions)

Note : Attempt **any three** questions. Each question carries **10** marks. (More than 500 words)   [3x10=30]

1.   Explain biomes and impact of climate on it.

2.   Describe environmental stresses and their management.

3.   Describe major classes of contaminants and their uptake.

4.   Write about biodiversity and its conservation with management.

----X----

SECTION-D

(Essay Type Questions)

Note : Attempt **any three** questions. Each question carries **10** marks. (more that 500 words)   [3x10=30]

4.   (i)   Write an essay on 'From Molecules of Life'.

      (ii)   Explain the factors responsible for speciation.

      (iii)   Discuss diversification of Bacteria and Archaea.

      (iv)   Discuss evolution of Homo Sapiens.

----X----

I-6518

M.Sc. (Semester-I) Examination, 2022

ZOOLOGY

(Entomology-Pest Ecology and Agricultural Entomology)

Time Allowed : Three Hours

Maximum Marks : 70

Note : Question paper is divided into four sections. Attempt question of all four sections as per direction. Distribution of marks is given in each section.

SECTION-A

(Objective Type Questions)

1.   Attempt **any ten** questions. Each question carries **1** mark.

[10×1=10]

(i) Gundhi bug attacks on :

 (a) Grain filling stage

 (b) Milking stage

 (c) Tellering stage

 (d) Flowering stage

(ii) Who is the father of biological control?

 (a) Smith

 (b) Aldrovandi

 (c) Koebele

 (d) Theodor Schwann

(iii) Which of the following is called the resting and inactive stage in the insect life cycle?

 (a) The Egg stage

 (b) The Larva stage

 (c) The Pupa stage

 (d) The Adult stage

(iv)   Insect which feed on one type of food are called :

    (a)   Polyphagous

    (b)   Monophagous

    (c)   Entomophagous

    (d)   None of the above

(v)   Light trapping of insects is done in the :

    (a)   Cultural methods

    (b)   Legal methods

    (c)   Mechanical method

    (d)   Preventive methods

(vi)   Which group of insects has simple metamorphosis?

    (a)   Fleas

    (b)   Beetles

    (c)   Flies

    (d)   Bugs

(vii)   What is bee- bread?

     (a)   Honey and Pollen

     (b)   Pollen and nectar

     (c)   Honey and wax

     (d)   Pollen and nectar or honey

(viii)   Chemicals which kill the pests are called :

     (a)   Insecticides

     (b)   Pesticides

     (c)   Acaricides

     (d)   Avicides

(ix)   Cotton jassid belongs to order of insect :

     (a)   Homoptera

     (b)   Thysanoptera

     (c)   Coleoptera

     (d)   Orthoptera

(x)   IGR affects :

    (a)   Egg development

    (b)   Pupal development

    (c)   Larval development

    (d)   Adult development

(xi)   Active ingredient in steward is :

    (a)   Chlorphyrifos

    (b)   Oxadiazine

    (c)   Spinosad

    (d)   Indoxacarb

(xii)   First Insect fossil was found in :

    (a)   England

    (b)   Russia

    (c)   Scotland

    (d)   USA

SECTION-B

(Very Short Answer Type Questions)

Note: Attempt **any five** questions. Each question carries **02** marks. (25-30 words)   [5×2=10]

2.   (i)   Write the Pest name of oil seeds?

(ii)   What is Antagonist?

(iii)   Define Secondary Pest.

(iv)   What are alternative to Pesticides?

(v)   What is an IPM?

(vi)   What is Quarantine?

(vii)   What do you mean by Pheromone?

SECTION-C

(Short Answer Type Questions)

Note: Attempt **any five** questions. Each question carries **04** marks. (250 words)   [5×4=20]

3. (i) Define Antixenosis.

(ii) What is role of Pheromones in Pest management?

(iii) Write short note on locust migration. ⎯

(iv) Chemical control of Pest?

(v) Write short notes on Pest of Sugarcane.

(vi) Write short notes on Ecology of Pest.

(vii) Write a note on Bt-Cotton?

SECTION-D

(Essay Type Questions)

Note: Attempt **any three** questions. Each question carries **10** marks. (more than 500 words)   [3×10=30]

4. (i) Discuss the Bacillus Thuringiensis and its mode of action on insect.

(ii) Write an essay on integrated Pest Management.

(iii)   Discuss biological control of Insects.

(iv)   Write a note on various method of identification of Pest?

----- X -----