Reg. No. : .....

Code No. : 10826 E **Sub. Code : CMZO 21**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022.

Second Semester

Zoology — Core

CHORDATA

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. In Amphioxus, fertilization is _____
   (a) Internal (b) External
   (c) Parthenogenesis (d) asexual
2. Endoskeleton of *Scoliodon* is made up of
   (a) Cartilage (b) Bone
   (c) Scales (d) Plates
3. The teeth in frog are meant for
   (a) Chewing
   (b) Preventing prey from slipping
   (c) Tearing
   (d) Cutting

4. Erythrocytes in Amphibians are

(a) Oval and anucleated

(b) Oval and nucleated

(c) Convex and nucleated

(d) Convex and anucleated

5. In Calotes, pharynx leads to oesophagus through an aperture the

(a) Gullet (b) Glottis

(c) Nares (d) Cloaca

6. Which one of the following is nonpoisonous snake?

(a) Coral snakes (b) Cobras

(c) Kraits (d) Python

7. Respiration of pigeon is_____ and the respiratory organs are fairly simple.

(a) gill (b) buccal

(c) pulmonary (d) cutaneous

8. Synsacrum is seen in

(a) Aves (b) Amphibia

(c) Reptilia (d) Mammals

9. The feeding habit of rabbit is _____ feeding on green vegetation and also coprophagous.

(a) Carnivorous (b) Herbivorous

(c) Omnivorous (d) Detritivorous

10. Marsupials are otherwise called as
    (a) egg-laying (oviparous) mammals
    (b) insect-eating mamals
    (c) toothless mammals
    (d) pouched mammals

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Elucidate the external morphology of shark with neat diagram.

Or

(b) Enlist the affinities of *Balanoglossus* with other animals.

12. (a) Discuss about any three orders of classification of Amphibia.

Or

(b) Give general account on metamorphosis of amphibians.

13. (a) Analyze the important orders of class Reptilia.

Or

(b) How do you identify poisonous and non-poisonous snakes?

14. (a) Describe the circulatory system of in Pigeon.

Or

(b) Describe different kinds of beaks seen in birds.

15. (a) List out the digestive system of rabbit.

Or

(b) Describe the female urino-genital organs of rabbit.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Bring out the important characters of major classes of vertebrates with examples.

Or

(b) Discuss about the different kinds of fish migration.

17. (a) Write an account on respiratory system of frog.

Or

(b) Describe about parental care in Amphibia.

18. (a) Examine the circulatory system of a Calotes.

Or

(b) Analyze the features present in male reproductive system of Calotes.

19. (a) Discuss different kinds of bird migration.

Or

(b) Enumerate the different flight adaptation in birds.

20. (a) Expound the adaptive radiation in aquatic mammals.

Or

(b) Summarize about dentition in mammals.

———————

(6 Pages)

Reg. No. : .....

Code No. : 10641 E **Sub. Code : SSZO 4 B/ ASZO 42**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022

Fourth Semester

Zoology – Main

Skill Based Subject — VERMITECHNOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Certain species of earthworms can ingest organic waste rapidly and fragment them into much fine particles by passing them through ————

(a) gizzard (b) anus

(c) mouth (d) buccal cavity

2. *Eudrilus eugeniae* is an example of

(a) endogeic (b) epigeic

(c) anecic (d) hydrogeic

3. Name the culture of earthworm under controlled condition in large is called as ————

(a) Aquaculture (b) Sericulture

(c) Apiculture (d) Vermiculture

4. Which one is South Indian species of earthworm used in vermicomposting process?

(a) Perionyx excavatus

(b) *Pontoscolex corethrurus*

(c) *Eisenia fetida*

(d) *Eisenia Andrei*

5. Which of the following is not raw material required for preparing composts?

(a) Cow dung

(b) Weed biomass

(c) Dry straw and leaves

(d) Plastic and glass

6. The bedding for vermicomposting systems must be able to retain both moisture and ———— while providing a place for the worms to live.

(a) air (b) light

(c) water (d) radiation

7. Potential benefits of vermicoposting is

(a) reducing pollution

(b) excessive accumulation of earthworms within potted plants disturbs root growth and nutrient supplies to plants

(c) some earthworm species have a role in spreading, development of parasites and pathogens

(d) surface dwelling earthworms have habits of pulling leaves and damage some plants like potted plants

8. Vermiwash is the ———— watery extract of compost, the wash of the earthworms present in the medium and considered as a wonder-tonic in agriculture.

(a) Leafy green coloured

(b) Honey-brown coloured

(c) Blood red coloured

(d) Sky blue coloured

9. It is found that the increased soil phosphatase activity was mainly due to phosphate production by ———— in vermibed.

(a) microorganisms (b) earthworm

(c) millipede (d) centipede

10. Select the financial agency to support vermiculture is

(a) BERI (b) KVB

(c) IOB (d) SBI

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Outline the classification of earthworms based on feeding behaviour/habits.

Or

(b) Elucidate the female reproductive system of earthworm with neat diagram.

12. (a) Explain the various methods of culture of earthworm.

Or

(b) List out any two exotic cultivable species of earthworms used in vermicomposting.

13. (a) Comment on the term composting, vermicomposting, vermiculture and vermitechnology.

Or

(b) Describe the various organic wate materials used for vermicomposting.

14. (a) Explain the procedure for preparation of vermiwash.

Or

(b) "Vermicompost has many advantages over chemical fertilizers" – Justify.

15. (a) Explain the interaction of earthworm with other organism particularly role of microbes in vermicomposting.

Or

(b) List out any five large scale manufacture of vemicompost in Tamilnadu.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the ecological types of earthworms with suitable examples.

Or

(b) Describe the different stages in life cycle of earthworm with illustration.

17. (a) List out any five earthworms used for vermicomposting.

Or

(b) Discuss the various methods of collection of earthworms.

18. (a) List out the requirements for successful production of vermicompost.

Or

(b) Describe different methods of vermicomposting which you have studied.

19. (a) Explain the therapeutic (medical) values of earthworms giving reasons.

Or

(b) Highlight the role of earthworm in solid waste management.

20. (a) Explain the any two financial agencies to support vermiculture.

Or

(b) How to harvest and packaging the vermicompost as final step in vermicomposting process?

(6 pages)

Reg. No. : .....

Code No. : 10644 E **Sub. Code : SNZO 4 A/ ANZO 41**

U.G. (CBCS) DEGREE EXAMINATION, APRIL 2022

Fourth Semester

Zoology

Non major Elective — PUBLIC HEALTH AND HYGIENE

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. How many dimensions for health according to W.H.O?

(a) 2 (b) 3

(c) 4 (d) 1

2. Vitamin – D deficiency causes the disease

(a) Beriberi (b) Rickets

(c) Keratomalacia (d) Scurvy

3. Which one is the fungal metabolite?

(a) Exotoxin (b) Mycotoxin

(c) Intoxication (d) Enterotoxin

4. When the wind blows through a room is called?

(a) perflation (b) aspiration

(c) inspiration (d) expiration

5. Amoebiasis is a ———— disease.

(a) protozoan (b) viral

(c) bacterial (d) fungal

6. Scientific study of human population is referred as

(a) life table (b) demography

(c) humanography (d) all of these

7. The causative organism of AIDS is

(a) MIV (b) HIV

(c) PIV (d) NPV

8. National Tuberculosis programme (NIP) has been in operation since

(a) 1962 (b) 1952

(c) 1972 (d) 1982

9. Which one of the following is an indicator of faecal pollution in water?

(a) streptococci (b) flavobacterium

(c) clostridium (d) saccharomyces

10. Anaemia is due to the deficiency of

(a) Iron (b) Copper

(c) Calcium (d) Phosphours

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Briefly explain the concept of hygiene.

Or

(b) Mention role of hygienic food in health of individual.

12. (a) Briefly describe about cholera.

Or

(b) Give an account of ventilation of a house.

13. (a) Mention the social aspects of excreta disposal in India.

Or

(b) Explain the life saving measure in an accident.

14. (a) Write an essay on amoebiasis.

Or

(b) Comment on typhoid.

15. (a) Give an account on the role of PHC.

Or

(b) What are the principles of primary health care?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write an essay on food toxicants.

Or

(b) Briefly mention about the birth control measures.

17. (a) Write an essay on the sources of water.

Or

(b) Write about the causative agent, pathogenesis, symptoms and control measures.

18. (a) Describe the methods of excreta disposal in rural area.

Or

(b) Write an essay on sanitary health measures to be practiced during fairs and festivals.

19. (a) What are viral diseases? Explain any two viral diseases.

Or

(b) What are helminth diseases? Describe any two helminth diseases.

20. (a) Write an essay on health problems.

Or

(b) Discuss the national AIDS control agency.

(6 pages)

Reg. No. : .....

Code No. : 10748 E **Sub. Code : AMZO 41**

B.Sc (CBCS). DEGREE EXAMINATION, APRIL 2022.

Fourth Semester

Zoology — Core

CELL AND MOLECULAR BIOLOGY

(For those who joined in July 2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The lever of the _____ is used to adjust the amount of light striking the object being studied.

   (a) Condenser

   (b) iris diaphragm

   (c) Adjustment Knobs

   (d) Objective Lenses

2. Sudan Black B is a specific stain for _____ and is used to stain Golgi apparatus.

(a) Carbohydrate

(b) Protein

(c) Phospholipids

(d) Nucleic acid

3. _____ can also destroy or degrade bacteria and foreign substances.

(a) Mitochondria

(b) Endoplasmic reticulum

(c) Golgi complex

(d) Lysosome

4. Stalked F1 particles are present in

(a) Outer mitochondria membrane

(b) Crystae

(c) Inner chamber

(d) Outer chamber

5. A malignant tumour is capable of both invading surrounding normal tissue and spreading throughout the body via the circulatory (or) lymphatic systems is called _____

(a) metamerism (b) metastasis

(c) apoptosis (d) lysis

6. The nucleolus contains primarily the

(a) Golgi complex (b) Mitochondria

(c) Chromosomes (d) Lysosomes

7. Choose the RNA that carries the information for protein synthesis

(a) tRNA (b) mRNA

(c) rRNA (d) sRNA

8. Nucleic acids are made up of

(a) Globulins (b) Albumens

(c) Nulceosides (d) Nucleotides

9. Operon model was originally proposed by

(a) Jacob and Monod

(b) Altmann and Benda

(c) Bateson and Punnet

(d) Watson & Crick

10. Choose the initiation codon from the following protein synthesis

(a) AUG (b) UGA

(c) UGC (d) GUA

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Compare and contrast prokaryotes and Eukaryotes

Or

(b) List out different types of stains used in cell biology.

12. (a) Recollect your idea about compounds that occur in ETC.

Or

(b) Enumerate the list of different functions of Lysosomes.

13. (a) Explain the structure and functions of Polytene chromosomes

Or

(b) Comment on the diagnosis and treatment of cancer.

14. (a) Compare and contrast DNA and RNA.

Or

(b) Prove that DNA as genetic material with experimental evidence.

15. (a) Enlist the characteristic features of genetic code.

Or

(b) Trace out the significance of mitosis and meiosis.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Comment on working mechanism of compound microscope.

Or

(b) Comment on working mechanism of phase contract microscope.

17. (a) Recollect your idea about ultra structure of Golgi complex.

Or

(b) Recall your idea about ultra structure of Endoplasmic reticulum.

18. (a) Comment on the structure and functional significance of lamp brush chromosomes.

Or

(b) Bring out the properties of cancer cell.

19. (a) Trace out the events in DNA replication.

Or

(b) Discuss different steps of proteins synthesis in prokaryotes.

20. (a) Analyze the term Lac operon in *E.coli*.

Or

(b) Elucidate the functional unit of gene.

(6 Pages)

Reg. No. : .....

Code No. : 10629 E **Sub. Code : SMZO 63**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022

Sixth Semester

Zoology — Core

BIOSTATISTICS, COMPUTER APPLICATIONS AND BIOINFORMATICS

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What is primary data?
   (a) Facts or figures
   (b) Information from journal
   (c) First hand information
   (d) All the above

2. A variable may also be called as ————
   (a) data item (b) raw data
   (c) age (d) all the above

3. The range is determined by only two ————

(a) missing value

(b) extreme data values

(c) lower limit

(d) all the above

4. A correlation of zero means there is no relationship between the ————

(a) two variables (b) three valuable

(c) four variable (d) all of the above

5. What is the CPU?

(a) Central Producing Unit

(b) Central Processing Unit

(c) Center Processing Unit

(d) All the above

6. MS-Word Window elements includes

(a) Title bar (b) Menu bar

(c) Toolbars (d) All the above

7. Bioinformatics is defined as the application of tools of computation and analysis to the capture and interpretation of ————

(a) biological data (b) chemical data

(c) physical data (d) all the above

8. Today, ———— is used in large number of fields such as microbial genome applications, biotechnology, waste cleanup, gene therepy.

(a) Bioinformatics (b) Biotranformation

(c) Biostatistics (d) All the above

9. SWISS-PORT contains the information about the name and origin of the

(a) Protein (b) Protoplasam

(c) Cytoplasm (d) Necleoplsam

10. Swiss-PdbViewer is an application that provides a user friendly interface allowing to analyze several proteins at the ————

(a) different hours (b) same time

(c) same protein (d) all the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe the classification of data.

Or

(b) Explains the main parts of a table.

12. (a) How do you calculate the standard deviation?

Or

(b) Describe the various application of chi squared.

13. (a) Explain differences between primary memory and secondary memory.

Or

(b) Describe the various features of Microsoft Word.

14. (a) Write a short note on the benefits to learning bioinformatics.

Or

(b) What is the main role of a bioinformatics in present biological research?

15. (a) What is EMBL format and its uses?

Or

(b) Define the term ENTREZ database and their functions.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Calculate the mean value of the following data.

X	6	7	8	9	10	11
f	15	17	20	16	19	13

Or

(b) What are frequency polygon curve and a frequency curve?

17. (a) What are the three types of correlation? Write an example of a positive correlation.

Or

(b) Find Karl Pearson's correlation coefficient for the following data.

X	3	2	1	5	4
Y	8	4	10	2	6

18. (a) Explain the different functions in Excel.

Or

(b) What are the uses of email and internet?

19. (a) Explain the different components and concept of bioinformatics.

Or

(b) Write about biological sequence alignment? Which model is used for biological sequence analysis?

20. (a) Write an essay on SWISS-PORT protein sequence database.

Or

(b) Which is the protein structure visualization tool and software mention the used?

(6 Pages)

Reg. No. : .....

Code No. : 10628 E **Sub. Code : SMZO 62**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022

Sixth Semester

Zoology — Core

IMMUNOLOGY AND MICROBIOLOGY

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

1. The development of resistance in foetus by the transfer of antibodies from the mother to the foetus naturally is known as

   (a) Natural active immunity

   (b) Natural passive immunity

   (c) Artificial active immunity

   (d) Artificial passive immunity

2. These secondary lymphoid tissues are encircling the pharynx

(a) Spleen (b) Bone marrow

(c) Lymph nodes (d) Tonsils

3. The second major immunoglobulin in human serum is

(a) IgM (b) IgG

(c) IgA (d) IgD

4. The precipitation test that required electroporesis is

(a) Nephelometry

(b) Rocket immunodiffusion

(c) Radial immunoediffusion

(d) None of the above

5. The defensive reaction of the immune system of an organism to a pathogen or a foreign substance is called

(a) Immunity (b) Immune response

(c) Immune complex (d) All of the above

6. Macrophages in the brain are

(a) Histocytes (b) Microglia

(c) Monocytes (d) Kupffer cells

7. When the flagella are present all over the cell, the bacterium is called

(a) Peritrichous (b) Amphitrichus

(c) Lophotrichous (d) Monotrichous

8. Cultivation of bacteria in a liquid medium is called

(a) Broth culture

(b) Agar pate culture

(c) Continuous culture

(d) Synchronous culture

9. Which one of the following is a food borne disease?

(a) Gonorrhea (b) Chicken pox

(c) Botulism (d) Rabies

10. Measles is caused by

(a) Herpes virus (b) Rubeola virus

(c) Rhabdo virus (d) Myxo virus

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the physical and mechanical factors of innate immunity?

Or

(b) Briefly explain the structure of tonsils.

12. (a) Elucidate the biological properties of IgM.

Or

(b) List out the salient features of antigen – antibody reaction.

13. (a) Explain the types of macrophages.

Or

(b) Enlist the functions of T cells.

14. (a) What are the scopes of microbiology?

Or

(b) Write a brief note on selective media.

15. (a) Write a critical account on biochemical changes of food spoilage.

Or

(b) Enumerate the symptoms and control measures of influenza.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Elaborate the history of immunology.

Or

(b) Describe the structure and functions of lymph nodes.

17. (a) Explain the structure and biological properties of IgG.

Or

(b) Write in detail about mechanism and applications of agglutination reaction.

18. (a) Highlight the mechanism of cell mediated immune response.

Or

(b) Write an essay on immuno diagnosis and immunotherapy of tumour.

19. (a) Analyse the structure of typical virus with a neat sketch.

Or

(b) Explain in detail about bacterial growth curve.

20. (a) Give a detailed account on industrial production of penicillin.

Or

(b) Discuss the causative organisms, symptoms, mode transmission and control measures of rabies.

———————

(6 Pages)

Reg. No. : .....

Code No. : 10627 E **Sub. Code : SMZO 61**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022

Sixth Semester

Zoology — Core

EVOLUTION

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

1. Similarity of structures connected with similarity of function is termed as

(a) Homology (b) Morphology

(c) Analogy (d) Palaentology

2. Which one of the following is called as chemical messengers?

(a) Enzymes (b) Chromosomes

(c) Phosphagens (d) Hormones

3. The Galapagos islands are associated with the visit of

(a) HMS Arjuna (b) INS Rathna

(c) HMS India (d) HMS Beagle

4. Natural selection theory was proposed by

(a) Charles Darwin (b) August Weismann

(c) Lamarck (d) Griffith

5. The differences between closely related animals are called

(a) Mutations (b) Variations

(c) Recombinations (d) Crossing over

6. When two populations occupying side by side evolve into two separate species the speciation is called?

(a) True speciation

(b) Allopatric speciation

(c) Sympatric speciation

(d) Gradual speciation

7. The organism which exhibit mimicry is called

(a) Mimic (b) Model

(c) Colouration (d) Coevolution

8. Volant forms of animals are characterized by

(a) Burrowing (b) Flying

(c) Fast running (d) All of the above

9. Which one of the following is called as dawn horse?

(a) Hyracotherium (b) Epihippus

(c) Mesohippus (d) Equus

10. The modern man belonged to the species

(a) Homo erectus

(b) Homo neanderthalensis

(c) Homo sapiens

(d) Homo heidelbergensis

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write a critical account on fossil connecting links.

Or

(b) Write a short note on geological time scale.

12. (a) What are the salient features of mutation theory?

Or

(b) Enlist the types of natural selection.

13. (a) What is variation? What are the sources of variations?

Or

(b) Give a brief note on ecological isolation.

14. (a) What are the salient features of mullerian mimicry?

Or

(b) List out the adaptations of aquatic forms.

15. (a) Give a short note on trends in human evolution.

Or

(b) Clarify the zoogeography of Australian region.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give an elaborate account on homologous organs.

Or

(b) Analyse the embryological evidences of evolution.

17. (a) Describe the principles of Darwinism with examples.

Or

(b) Highlight the principles of Lamarckism with examples.

18. (a) Explain in detail about Hardy – Weinberg law.

Or

(b) Give a detailed account on sympatric speciation.

19. (a) Clarify the protective colouration with examples.

Or

(b) Compare the adaptations of Cursorial forms with Volant forms.

20. (a) Discuss – evolution of man as seen in the fossil record.

Or

(b) Write an essay on patterns of animal distribution.

———————