

Total Pages : 8

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I-6531

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

ZOOLOGY

(Comparative Animal Physiology)

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)

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

I-6531/490

(1)

[P.T.O.]

1.(A) Fill in the blanks :

- (i) Name the liver cells which are phagocytic in nature _____.
- (ii) The human heart consists of _____ chambers, while the fish heart has _____ chambers.
- (iii) The structural and functional unit of the striated Muscle fibre is called _____.
- (iv) The term chromatophore was coined by _____.

(B) Objective Type Questions :

(v) Ducts of Bellini are found in :

- (a) Liver
- (b) Intestine
- (c) Medulla oblongata
- (d) Kidney

(vi) In ileum which of the following is absorbed?

- (a) Vitamin
- (b) Monosaccharide

- (c) Bile salts
 - (d) Fat
- (vii) Reabsorption of water in the Kidney is under control of :
- (a) ADH
 - (b) ACTH
 - (c) LH
 - (d) FSH
- (viii) Loop of Henle lies in :
- (a) Cortex
 - (b) Medulla
 - (c) Pelvis
 - (d) Ureter
- (xi) Cori's Cycle operates in :
- (a) Liver
 - (b) Liver and muscle

- (c) Muscle
 - (d) Nerve
- (x) Canal joining internal ear with buccal cavity is :
- (a) Semicircular canal
 - (b) Tympanic cavity
 - (c) Eustachian tube
 - (d) Aqueduct of Bylvius
- (xi) The part of an eye which acts like diaphragm of photographic camera is :
- (a) Pupil
 - (b) Iris
 - (c) Lens
 - (d) Cornea
- (xii) Heart beat originates from :
- (a) Purkinje fibres
 - (b) AV node

(c) SA node

(d) Chordae Tendinae

SECTION-B

(Very Short Answer Type Questions)

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

2. (i) What is hibernation?
- (ii) What do you mean by Acclimatization?
- (iii) Write short note on mechanoreception.
- (iv) What is the process of gas Exchange?
- (v) How does Nervous System Control the heart beat?
- (vi) How does respiratory system responses to extreme conditions?
- (vii) Draw the diagram of Striated Muscle.

SECTION-C

(Short Answer Type Questions)

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

3. (i) What is Echolocation?
- (ii) Describe the Neural and Chemical regulation of Respiration.
- (iii) Discuss effect of Starvation.
- (iv) Give an account on Counter Current heat exchangers.
- (v) Write short note on the stress and hormone.
- (vi) What is biological rhythms?
- (vii) Explain the heat balance in animals.

SECTION-D

(Essay Type Questions)

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

4. (i) Explain the Osmoregulation in Terrestrial and Aquatic Environments.
- (ii) Describe Mechanism of Bioluminescence.
- (iii) Describe mechanism of Chromatophores.
- (iv) Write in detail about regulation of body pH.

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Total Pages : 8

I-6532

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

ZOOLOGY

(Developmental Biology)

Time Allowed : Three Hours

Maximum Marks : 70

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

SECTION-A

(Objective Type Questions)

Note : Attempt any ten questions. Each question carries 1 mark. [1x10=10]

I-6532/490

(1)

[P.T.O.]

1. (i) Egg of Eutherian mammals is :
- (a) Centrolecithal
 - (b) Telolecithal
 - (c) Macrolecithal
 - (d) Microlecithal
- (ii) In the chick blastoderm the process of Neural plate formation is initiated at ?
- (a) Epiblast
 - (b) Area Opaca
 - (c) Hypoblast
 - (d) Neural Crest Cells
- (iii) The Primitive Streak of chick embryo is comparable to blastopore. (Yes/No)
- (iv) At the end of first Meiotic Division the male germ cells differentiate into :
- (a) Spermatogonium
 - (b) Primary Spermatocyte

- (c) Secondary Spermatocyte
 - (d) Spermatid
- (v) Which layer of the exoskeleton forms after ecdysis has been completed?
- (a) Procuticle
 - (b) Exo cuticle
 - (c) Epicuticle
 - (d) Cuticulin layer
- (vi) Imaginal Discs are best described as :
- (a) Vestigial reproductive organs
 - (b) Clumps of undifferentiated cells
 - (c) Underdeveloped legs and wings
 - (d) Control centers for embryological development

(vii) Which structure develop from Embryonic Ectoderm?

(a) Heart

(b) Brain

(c) Midgut

(d) Muscle

(viii) Antifertilizin interact with _____ molecules.

(ix) The fusion of male and female pronuclei is called _____.

(x) Regeneration of a limb or tail is an example of :

(a) Epimorphosis

(b) Autotomy

(c) Compensatory Hypertrophy

(d) Morphallaxis

- (xi) Mitosis is similar to Meiosis-II. (State : True/False).
- (xii) G1 phase is marked by synthesis of RNA and protein. (State : True/False)

SECTION-B

(Very Short Answer Type Questions)

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

2. (i) What are the Imaginal Disc?
- (ii) Define term teratogenesis.
- (iii) What is Cleavage?
- (iv) What is Pleiotrophy?
- (v) Give examples of Epimorphic regeneration.
- (vi) What is Organogenesis?
- (vii) What do you mean by Morphogenesis?

SECTION-C

(Short Answer Type Questions)

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

3. (i) Differentiate between invagination and involution.
- (ii) Neural Tube Formation.
- (iii) Cell Differentiation.
- (iv) Allometric Growth.
- (v) Morphogenetic Movements.
- (vi) Epimorphic Regeneration.
- (vii) Genetic Heterogeneity

SECTION-D

(Essay Type Questions)

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

4. (i) Describe the process of Meiosis. Add a note about its genetical significance.
- (ii) What are the Embryonic Stem Cells? Describe in detail their applications?
- (iii) Give a schematic account of mechanism of regeneration of Salamander limb.
- (iv) Enumerate the factors that influence the Teratogenic effects of an Environmental Teratogen.

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Total Pages : 8

I-6533

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

ZOOLOGY

(Immunology)

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.

SECTION-A

(Objective Type Questions)

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

[1x10=10]

I-6533/490

(1)

[P.T.O.]

1.(A) Fill in the blanks :

- (i) The ability of the body to fight disease is called _____.
- (ii) _____ cells produces antibodies.
- (iii) _____ Immunoglobulins is also called Secretory immunoglobulin.
- (iv) T cells mature in _____.

(B) Choose the correct alternative :

- (v) Antigens are found :
 - (a) Inside the cytoplasm
 - (b) Inside the nucleus
 - (c) On nuclear envelope
 - (d) On cell surface
- (vi) Chemically, an antibody is :
 - (a) Protein
 - (b) Lipoprotein

- (c) Lipid
 - (d) Nucleoprotein
- (vii) Number of antigen binding sites in IgM is :
- (a) 5
 - (b) 8
 - (c) 4
 - (d) 10
- (viii) Joining chain is found in :
- (a) IgM
 - (b) IgA
 - (c) IgM and IgA
 - (d) IgE
- (ix) Which of the following is not APC?
- (a) B Cell
 - (b) CD4 Cell

- (c) Macrophage
- (d) CD8 Cell
- (x) Which of the following Cytokine is secreted by NK Cells?
- (a) IFN- α
- (b) TNF- α
- (c) TNF- β
- (d) IFN- γ
- (xi) Adaptive immunity is the first line of defense of the immune system. (State : True/False).
- (xii) All cells express Class-II MHC molecules on their surface. (State : True/False).

SECTION-B

(Very Short Answer Type Questions)

Note: Attempt any five questions. Each question carries 2 marks. [2x5=10]

2. Write brief on :

I-6533/490

(4)

- (i) Secondary Lymphoid Organ
- (ii) Chemokines
- (iii) Killer cells
- (iv) Antigen receptors
- (v) T.C.R.
- (vi) Epitope
- (vii) Hapten

SECTION-C

(Short Answer Type Questions)

Note: Attempt any five questions. Each question carries 4 marks. [5x4=20]

3. Write short notes on the following :

- (i) Classical pathway
- (ii) IgE and allergic reactions
- (iii) Differentiate between Humoral and Cell mediated immunity

- (iv) Role of TLRs in innate immune response
- (v) Immunological memory
- (vi) Adaptive immunity to infection
- (vii) B cell differentiation

SECTION-D

(Essay Type Questions)

Note: Attempt **any three** questions. Each question carries **10** marks. [3x10=30]

4. (i) Write an essay on Vaccines.
- (ii) Describe the structure of antibodies, its types and functions.
- (iii) Write an essay on the gene rearrangement of T cell receptor.
- (iv) Describe the mechanism of innate immune responses.

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Total Pages : 16

23275

I-3331C

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

**INTELLECTUAL PROPERTY
RIGHTS, HUMAN RIGHTS AND
ENVIRONMENT BASICS**

**(बौद्धिक सम्पदा अधिकार,
मानवाधिकार व पर्यावरण पृष्ठभूमि)**

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. Distribution of marks is given in each section.

यह प्रश्न पत्र चार खण्डों में विभक्त है। सभी खण्ड अनिवार्य हैं। प्रत्येक खण्ड में दिये गये निर्देशों के अनुसार प्रश्नों के उत्तर दीजिए। अंकों का विभाजन प्रत्येक खण्ड में दिया गया है।

I-3331C/3500

(1)

[P.T.O.]

SECTION-A / खण्ड-अ

(Objective Type Questions)

(वस्तुनिष्ठ प्रश्न)

Note : Attempt any ten questions. Each question carries 1 mark. [1x10=10]

किन्हीं दस प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न 1 अंक का है।

1.(A) Choose the correct option :

सही विकल्प का चयन कीजिए :

(i) The word Patent is derived _____ term.

(a) Greek

(b) Italian

(c) French

(d) Latin

पेटेन्ट शब्द की उत्पत्ति किससे हुई ?

(a) ग्रीक

(b) इटालियन

(c) फ्रेंच

(d) लैटिन

(ii) The first owner of question paper of an Examination is _____.

(a) Examiner

(b) Principal

(c) C.O.E.

(d) Paper setter

किसी परीक्षा के प्रश्नपत्र का प्रथम मालिक होता है :

(a) परीक्षक

(b) प्राचार्य

(c) सी.ओ.ई. (C.O.E.)

(d) प्राशिनक

(iii) The following is under Intellectual Property Rights :

(a) Copy Right

(b) Trademark

- (c) Design
- (d) All of the above

बौद्धिक संपदा अधिकार के अंतर्गत है :

- (a) कॉपी राइट
- (b) ट्रेडमार्क
- (c) डिजाइन
- (d) उपरोक्त सभी

(iv) When is World Intellectual Property Day celebrated ?

- (a) 23 April
- (b) 24 April
- (c) 25 April
- (d) 26 April

विश्व बौद्धिक संपदा दिवस मनाया जाता है :

- (a) 23 अप्रैल
- (b) 24 अप्रैल

(c) 25 अप्रैल

(d) 26 अप्रैल

(v) The Protection of Human Right Act, came into force in India :

(a) 10 December, 1948

(b) 26 January, 1950

(c) 28 September, 1993

(d) 8 January, 1994

भारत में मानव अधिकार संरक्षण अधिनियम लागू हुआ :

(a) 10 दिसम्बर, 1948

(b) 26 जनवरी, 1950

(c) 28 सितम्बर, 1993

(d) 8 जनवरी, 1994

(vi) The headquarters of the National Human Rights Commission located in_____.

(a) New Delhi

(b) Kolkata

(c) Mumbai

(d) Chennai

राष्ट्रीय मानवाधिकार आयोग का मुख्यालय.....में स्थित है।

(a) नई दिल्ली

(b) कोलकाता

(c) मुंबई

(d) चेन्नई

(vii) In this part of Indian Constitution is Human Rights most commonly adopted under Human Rights :

(a) 2

(b) 3

(c) 4

(d) 5

मानव अधिकार के अंतर्गत भारतीय संविधान के इस भाग में मानव अधिकार सर्वाधिक रूप से अंगीकृत किया गया है :

(a) 2

(b) 3

(c) 4

(d) 5

(B) Fill in the blanks :

रिक्त स्थानों की पूर्ति कीजिए :

(viii) Full form of IPR is_____.

(Intellectual Property Right / Indian Property Right)

IPR का पूर्ण रूप_____ है।

(बौद्धिक संपदा अधिकार/भारतीय संपत्ति अधिकार)

(ix) Satat Vikas Shabda is used first time in_____.

(1987/1980/1978/1992)

सतत् विकास शब्द पहली बार.....में प्रयोग किया गया।

(1987/1980/1978/1992)

(x) World Intellectual Property Organisation Office is located at_____.

(New York/Rome/Geneva/Washington)

विश्व बौद्धिक संपदा संगठन का कार्यालय.....में स्थित है।

(न्यूयॉर्क/रोम/जिनेवा/वाशिंगटन)

(xi) Symbol of Maharaja of Air India is_____.

(Copy Right/Patent/Trademark/All)

एयर इंडिया के महाराजा का चिन्ह.....है।

(कापीराइट/पेटेंट/ट्रेडमार्क/सभी)

(xii) India's Rank in the Intellectual Property Index - 2022 is_____.

(40/43/36/41)

बौद्धिक संपदा सूचकांक - 2022 में भारत का स्थानहै।

(40/43/36/41)

SECTION-B / खण्ड-ब

(Very Short Answer Type Questions)

(अति लघु उत्तरीय प्रश्न)

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

**किन्हीं पाँच प्रश्नों का उत्तर दीजिए। प्रत्येक प्रश्न 02 अंकों का है।
(शब्द सीमा 25-30 शब्द)**

2. (i) What do you mean by 'Intellectual Property' ?

“बौद्धिक संपदा” से आप क्या समझते हैं ?

(ii) Define 'Patent'.

‘पेटेन्ट’ को परिभाषित कीजिए।

(iii) Explain full form of 'TRIPS'.

'TRIPS' का पूरा नाम बताइए।

(iv) What do you understand by 'Copyright' ?

‘कॉपीराइट’ से आप क्या समझते हैं ?

(v) What is 'Human Rights' ?

‘मानवाधिकार’ क्या है ?

(vi) What do you mean by 'WIPO' ?

डब्ल्यू.आई.पी.ओ. (WIPO) से आप क्या समझते हैं ?

(vii) What do you mean by "Trademark" ?

“ट्रेडमार्क” से आप क्या समझते हैं ?

SECTION-C / खण्ड-स

(Short Answer Type Questions)

(लघु उत्तरीय प्रश्न)

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

निम्नलिखित में से किन्हीं पाँच प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न 04 अंकों का है। (शब्द सीमा 250 शब्द)

3. (i) Define 'Intellectual Property Rights'. What are laws related to Intellectual Property Rights in India ?

‘बौद्धिक संपदा अधिकार’ को परिभाषित कीजिए। भारत में बौद्धिक संपदा अधिकार से संबंधित नियम क्या हैं ?

- (ii) State the difference between 'Copyright and Patent'.

‘कॉपीराइट तथा पेटेंट’ के बीच अंतर बताइए।

- (iii) Explain the following :

- (a) Liberty related rights
(b) Equality related rights

निम्न को समझाइए :

- (a) स्वतंत्रता संबंधी अधिकार
(b) समानता संबंधी अधिकार

- (iv) Describe the procedure and function of Regional Court.

क्षेत्रीय न्यायालय की प्रक्रिया एवं कार्यों का वर्णन कीजिए।

- (v) Explain the Right of Environment as a Human Rights.

मानवाधिकार के रूप में पर्यावरण के अधिकार की विवेचना कीजिए।

(vi) Write short notes on the following :

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :

(a) Trademark

व्यापार चिन्ह

(b) Geographical Indication

भौगोलिक उपदर्शन

(vii) Explain the main features of the Copyright Act, 1957.

प्रतिलिपि अधिकार अधिनियम, 1957 की मुख्य विशेषताएँ समझाइए।

OR / अथवा

What are the special rights of Author under Copyright Act, 1957 ?

प्रतिलिपि अधिकार अधिनियम, 1957 के अंतर्गत रचयिता के विशेष अधिकार क्या हैं ?

SECTION-D / खण्ड-द

(Long Answer Type Questions)

(दीर्घ उत्तरीय प्रश्न)

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

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

4. (i) What is 'Invention' under the Patents Act, 1970 and which Invention cannot be patented under the Patent Act, 1970 ?

पेटेण्ट अधिनियम, 1970 के अंतर्गत 'आविष्कार' क्या है और किन आविष्कारों का पेटेण्ट अधिनियम, 1970 के अंतर्गत पेटेण्ट नहीं हो सकता है ?

- (ii) Describe the Fundamental Rights given to citizen in the Indian Constitution.

भारत के संविधान में नागरिकों को प्रदत्त मौलिक अधिकारों का वर्णन कीजिए।

- (iii) Write short note on World Intellectual Property Organisation (WIPO).

विश्व बौद्धिक संपदा संगठन पर संक्षिप्त टिप्पणी लिखिए।

- (iv) Describe in detail the structure, work and power of State Human Rights Commission.

राज्य मानवाधिकार आयोग की संरचना, कार्य तथा शक्तियों का विस्तार से वर्णन कीजिए।

- (v) Discuss various types of Intellectual Property. Describe its role and importance in the economic development of the country.

बौद्धिक संपदा के प्रकारों की विवेचना कीजिए। देश के आर्थिक विकास में इनकी 'भूमिका और महत्व का वर्णन कीजिए।

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Total Pages : 8

I-6536

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

ZOOLOGY

**(Molecular Endocrinology &
Reproduction Neuroendocrinology)**

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** marks. [1x10=10]

I-6536/280

(1)

[P.T.O.]

1.(A) Fill in the blanks :

- (i) Diabetes mellitus occurs due to hyposecretion of _____.
- (ii) Gonadotropin hormones are secreted by _____ part of pituitary.
- (iii) Islets of Langerhans produce _____ hormone.
- (iv) Chemical substances secreted into blood by certain ductless gland of body are called _____.
- (v) Acetylcholine is secreted by _____.

(B) Objective Type Questions :

- (vi) Among which one of the following groups of chemicals all are neurotransmitter?
 - (a) Somatostatin serotonin, acetylcholine
 - (b) Nor-adrenaline, somatostatin threonine
 - (c) Glycine, dopamine, Melatonin
 - (d) Acetylcholine, nor-adrenaline, dopamine

(vii) LH and FSH are collectively called :

- (a) Antistress hormones
- (b) Emergency hormones
- (c) Gonadotropic hormone
- (d) Neuro hormone

(viii) FSH is produced by :

- (a) Thyroid gland
- (b) Posterior lobe of pituitary
- (c) Anterior lobe of pituitary
- (d) Gonads

(ix) Nerve fibres in a lateral funiculi of spinal cord are:

- (a) Sensory only
- (b) Sensory and motor
- (c) Motor only
- (d) Not differentiated

(x) Nerve impulse is conducted faster in neurons having:

- (a) Thick myelin sheath
- (b) Thin myelin sheath
- (c) No myelin sheath
- (d) Branching axons without neurilemma

(xi) When we are excited our heart beat increases because:

- (a) Acetylcholine is secreted by vagus nerve
- (b) Nor-epinephrine enters heart from sympathetic nerves
- (c) CO₂ level in blood increases
- (d) None of the above

(xii) Initiation of an impulse in a nerve fibre is caused by increase in permeability of the covering membrane to :

- (a) Sodium ions
- (b) Potassium ions

(c) Calcium ions

(d) Water molecules

SECTION-B

(Very Short Answer Type Questions)

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

2. Write short notes on the following :

(i) Vasopressin/ADH

(ii) Neuro endocrine organs

(iii) Neuromodulation

(iv) G-protein

(v) Adenohypophysis

(vi) Pineal gland

(vii) Stress hormone

SECTION-C

(Short Answer Type Questions)

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

3. (i) Characteristics of neurons
- (ii) Electrophysiology
- (iii) Neurotransmitter and its release.
- (iv) Cytology of pituitary gland
- (v) Concept of feedback inhibition
- (vi) Role of GABA in adult trophic area
- (vii) Physiological actions of melatonin

SECTION-D

(Essay Type Questions)

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

4. (i) Describe the principles and applications of techniques of electrophysiology.

- (ii) Explain the embryonic diapauses and other adaptive mechanism.
- (iii) Describe the synthesis and storage of oxytocin and vasopressin and also add a note on feedback inhibition
- (iv) Describe the electrical properties of neurons and propagation of nerve impulse.

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