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**B.Sc. (Part - III) (Semester - VI) (CBCS) Examination,
March - 2023**

**ZOOLOGY (Paper - XVI)
Insect Vector and Histology (DSE-F-32)
Sub. Code : 81689**

Day and Date : Monday, 05 - 06 - 2023

Total Marks : 40

Time : 10.30 a.m. to 12.30 p.m.

- Instructions : 1) All the questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labelled diagram wherever necessary.

Q1) Select correct alternatives and rewrite again :

[8]

- i) Kala-azar is transmitted by _____.
a) Dragon fly
b) Housefly
c) Tse-tse fly
d) Sand fly
- ii) Newly entered Sporozoites of the malarial parasites migrate and first develop inside the _____.
a) Liver
b) Brain
c) Lungs
d) Pancreas
- iii) Pancreatic beta cell secrete _____.
a) Glucagon
b) Insulin
c) Gastrin
d) Somatostatin

P.T.O.

- iv) The histological structure of organ lacks goblet cells.
- a) Nasal cavity
 - b) Ileum
 - c) Trachea
 - d) Oesophagus
- v) The *Aedes* mosquito transmits _____ disease.
- a) Dengue
 - b) Malaria
 - c) Small pox
 - d) Jaundice
- vi) Name the vector via yellow fever is transmitted to humans?
- a) Ticks
 - b) Shadflies
 - c) Mosquitoes
 - d) Rodents
- vii) Sand fly transmits _____ parasite.
- a) Plasmodium
 - b) Leishmania
 - c) Zika
 - d) Ebola
- viii) On an average life cycle of mosquitoes completed within a days.
- a) 20-25 days
 - b) 25-30 days
 - c) 30-40 days
 - d) 7-12 days

Q2) Answer the following questions (Any two) :

[16]

- a) Describe in detail histological structure of mammalian duodenum and liver with suitable diagram.
- b) Explain in detail life cycle of Rat flea and Flea-borne disease plague.
- c) Describe life cycle of mosquito with suitable diagram and write in brief on its control measures.

Q3) Write short note on following (Any four) :

[16]

- a) Host-specificity.
- b) Write in brief on typhus fever.
- c) Sand fly as a vector.
- d) Explain in brief histology of mammal tooth with suitable diagram.
- e) Mode of infection of dengue disease.
- f) Control measures of house fly.



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B.Sc. (Part - III) (Semester - VI) (CBCS) Examination, March - 2023

MATHEMATICS (Paper - XIII)

DSE-F9 Metric Spaces

Sub. Code : 81662

Day and Date : Thursday, 01 - 06 - 2023

Total Marks : 40

Time : 10.30 a.m. to 12.30 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.

Q1) Select the correct alternatives each of the following : [8]

i) The set of real numbers with absolute value metric is a metric space, which is usually denoted by...

a) R^∞

b) R^2

c) R_d

d) R^1

ii) Which of the following is not a Cauchy sequence in a metric space R^1 ?

a) $\left\{ \frac{n+4}{n} \right\}$

b) $\{n\}$

c) $\left\{ \left(\frac{1}{2} \right)^n \right\}$

d) $\left\{ \left(1 + \frac{1}{n} \right)^n \right\}$

- iii) In a discrete metric space $M=R_d$, i.e the real line with discrete metric, $B[0;1]=\dots$
- $\{0\}$
 - $\{1\}$
 - R_d
 - ϕ
- iv) In a metric space intersection of an infinite number of open sets is.....
- Need not be an open set
 - always an open set
 - is closed set
 - neither open nor closed set
- v) Consider the following statements.
- If E is any subset of metric space M then $E \supset \bar{E}$.
 - If E is any subset of metric space M then E is closed subset of M if $E = \bar{E}$ Then.....
- Only I) is true.
 - Only II) is true
 - Both I) and II) are true
 - Both I) and II) are false
- vi) In a usual metric space R^1 , the set $A=(0,1] \cup [1,2]$ is.....
- an open set in R^1
 - a connected set in R^1
 - a closed set in R^1
 - compact set in R^1
- vii) If T is contraction mapping on metric space M then....
- T is decreasing
 - T is increasing
 - T is constant
 - T is continuous

- viii) If a real valued function f is continuous on the compact metric space M then...
- There exists atleast one point $x \in M$ such that f attains its maximum value at x .
 - There exists only one point $x \in M$ such that f attains its maximum value at x .
 - There exists atmost one point $x \in M$ such that f attains its maximum value at x .
 - None of these

Q2) Attempt any Two of the following: [16]

- Let $\langle M_1, Q_1 \rangle$ and $\langle M_2, Q_2 \rangle$ be metric spaces and let $f : M_1 \rightarrow M_2$. Show that f is continuous on M_1 if and only if $f^{-1}(G)$ is open in M_1 whenever G is open in M_2 .
- If $\langle M, Q \rangle$ is any complete metric space and T is a contraction on M , show that there is one and only one point x in M such that $Tx=x$.
- Show that the metric space $\langle M, Q \rangle$ is compact if and only if, whenever \mathfrak{F} is a family of closed subsets of M with the finite intersection property, then $\bigcap_{F \in \mathfrak{F}} F \neq \phi$.

Q3) Attempt any Four of the following : [16]

- If Q and σ are metric on M , show that $Q + \sigma$ is also a metric on M .
- Show that any Cauchy sequence in a metric space R_d is convergent.
- Show that arbitrary intersection of closed subsets of a metric space M is a closed subset of M
- If G is an open set in a metric space M , show that G' is closed.
- If f is a continuous function from a connected metric space M_1 into a metric space M_2 , then show that the range of f is also connected.
- Giving an example of an infinite subset of metric space l^2 , prove that every bounded set need not be totally bounded.



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B.Sc. (Part-III) (Semester-VI) (CBCS)**Examination, March - 2023****ZOOLOGY (Paper - XIII)****Developmental Biology of Vertebrates****Sub. Code : 81686****Day and Date : Thursday, 01 - 06 - 2023****Total Marks : 40****Time : 10.30 a.m. to 12.30 p.m.**

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Neat diagram must be drawn wherever necessary

Q1) Select the correct alternatives and rewrite the sentence : [8]

- i) Non-cleidoic eggs are found in the
- a) Pisces
 - b) Amphibians
 - c) Reptiles
 - d) Aves
- ii) Germ cells in mammalian gonads are produced by
- a) Only mitosis
 - b) Only meiosis
 - c) Mitosis & Meiosis both
 - d) Without cell division
- iii) Gastrulation in frog begins at.....
- a) Grey crescent
 - b) Below the grey crescent
 - c) Animal pole
 - d) Vegetal pole

P.T.O.

- iv) Blastula of frog is called as.....
- a) Coeloblastula
 - b) Blastocyst
 - c) Disco blastula
 - d) None of this
- v) At the broad end of the shell membrane enclose.....
- a) Excretory space
 - b) Circulatory space
 - c) Air space
 - d) Nutritive space
- vi) The invagination & involution are examples of
- a) Mesoboly
 - b) Epiboly
 - c) Emboly
 - d) None of this
- vii) Blastodisc is united with the yolk mass by
- a) Epiblast
 - b) Endoblast
 - c) Periblast
 - d) Mesoblast
- viii) Thirty three hours of chick embryo is identified by the presence of pairs of somites
- a) 10
 - b) 11
 - c) 12
 - d) 13

Q2) Attempt any two of the following:

[16]

- a) Define Fertilization and explain the process of internal fertilization
- b) Describe the fate of three germ layers in the frog.
- c) Describe chick development up to development of primitive streak.

Q3) Attempt any four of the following :

[16]

- a) Types of Cleavages
- b) Capacitation of sperm
- c) Egg of frog
- d) Area opaca and area pellucida
- e) Yolk sac Placenta
- f) Significance of Placenta.



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Summer Examination March - 2023

Subject Name: B.Sc. (CBCS)_79693_65848_79693_79940 - Zoology Paper IX_01.06.2023_02.30 PM To 04.30 PM

Subject Code: 79693

Day and Date: - Thursday, 01-06-2023

Total Marks: 40

Time: - 02:30 pm to 04:30 pm

Instructions.:

- 1) All questions are compulsory
- 2) Figures to the right indicate full marks
- 3) Use Sketches/Diagrams wherever necessary

Q.1. Select the correct alternative from the given options and rewrite the sentences 8 marks [8]

i. The ventricle in cerebrum is known asventricle.

- a) Metacoel b) Paracoel
c) Diocoel d) Optocoel

ii. The basal layer of epidermis in mammalian skin

- a) Stratum corneum b) stratum granulosa
c) Stratum germinativum d) stratum leucidium

iii. The..... gland is present only in birds

- a) Sebaceous b) mammary
c) Sweat d) urophygeal

iv. A complete gill is called as.....

- a) holobranch b) demibranch
c) psudobranch d) hemibranch

v. The pulmonary artery is developed from..... aortic arch

- a) third b) fourth
c) fifth d) sixth

vi. The trachea is absent in

- a) frog b) pigeon
c) calotes d)

rat

vii. The presence of spiral valve in the intestine is the characteristic of

- a) labeo b) catla
c) shark d) flat fish

viii. The first cervical vertebra is called as

- a) axis b) atlas
c) sacral d) typical

Q.2. Attempt any two of the following [16]

1. Describe digestive system of amphibia and compare it with digestive system of reptile

2. Describe the structure of mammalian lung and compare it with the amphibian lungs

3. Describe the soft dermal derivatives of integuments

Q.3. . Attempt any four of the following

[16]

- 1. Aortic arches in amphibian**
- 2. Heart of aves**
- 3. Pectoral girdle of reptile**
- 4. Lungs and air sacs in aves**
- 5. Brain of scoliodon**
- 6. Skin of reptiles**

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B. Sc. (Part - III) (Semester - VI) (CBCS) Examination, March - 2023
ZOOLOGY (Paper - XV)
Applied Zoology - II
Sub. Code : 81688

Day and Date : Saturday, 03 - 06 - 2023

Total Marks: 40

Time : 10.30 a.m. to 12.30 p.m.

- Instructions:**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Draw neat labeled diagrams wherever necessary.

Q1) select the correct alternative from the given options and rewrite sentences : [8]

- i) _____ is commonly known as rock bee
 - a) Apis indica
 - b) Apis dorsata
 - c) Apis florae
 - d) Apis mellifera
- ii) Bee dance is also known as _____
 - a) Western dance
 - b) Flee dance
 - c) Happy dance
 - d) Waggle dance
- iii) Rathi is a famous breed of _____
 - a) Buffalo
 - b) Cow
 - c) Goat
 - d) Pig
- iv) The pearl bed which produces best quality is known as _____
 - a) Lingha pearl
 - b) Muktaphal
 - c) Kusum
 - d) None of the above
- v) Who stands first in the world for pearl production
 - a) India
 - b) China
 - c) Korea
 - d) Japan

P.T.O.

