



K23U 2389

Reg. No. :

Name :

**V Semester B.Sc. Degree (C.B.C.S.S.-O.B.E.- Regular/Supplementary/
Improvement) Examination, November 2023
(2019-2021 Admissions)
CORE COURSE IN ZOOLOGY
5B08ZLG : Genetics**

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures *wherever* necessary.

- I. Essay Questions. (**Each** question carries **8** marks). Answer **any two** : **(2×8=16)**
- 1) Describe mutations from chromosomal aberrations in detail.
 - 2) Explain the characterisation of human chromosomes using banding techniques.
 - 3) What is epistasis ? Describe the types of epistasis.
 - 4) Explain the influence of hormones and environment in sex determination in organisms.
- II. Short Essay Questions. (**Each** question carries **4** marks). Answer **any two** : **(2×4=8)**
- 5) Explain sex linked diseases.
 - 6) Describe the conventions followed in pedigree construction.
 - 7) Write a short essay on eugenics, euthenics and euphenics.
- III. Short Answer Questions. (**Each** question carries **2** marks). Answer **any six** : **(6×2=12)**
- 8) Write a short note on thalassemia.
 - 9) Give a note on gynandromorphs, with examples.
 - 10) Comment on the relationship between linkage and genetic recombination.
 - 11) A man of blood group AB marries a woman of O group. What are the possible blood groups of their children ?
 - 12) What are Kappa particles ?
 - 13) What is criss-cross pattern of inheritance ? Cite an example.
 - 14) What is Bombay blood group ?
 - 15) Differentiate between monohybrid and dihybrid crosses.

P.T.O.

IV. Multiple Choice Questions. (**Each** question carries **0.5** marks). Answer **all**. (**8** \times **0.5=4**)

- 16) Erythroblastosis foetalis is found in the children having
- Rh negative parents
 - Rh negative mother and Rh positive father
 - Rh positive parents
 - Rh negative father and Rh positive mother
- 17) Select the test cross from the following :
- $Tt \times Tt$
 - $TT \times Tt$
 - $TT \times TT$
 - $Tt \times tt$
- 18) Which is a polygenic trait ?
- Human skin colour
 - Haemophilia
 - Frameshift mutation
 - Widow's peak
- 19) The F₂ monohybrid genotypic ratio in Mendelian crosses
- 9 : 3 : 3 : 1
 - 9 : 4 : 1
 - 3 : 1
 - 1 : 2 : 1
- 20) Genic balance theory was proposed by
- Hugo de Vries
 - Calvin Bridges
 - Gregor Mendel
 - Mary Lyon
- 21) Patients suffering from albinism are deficient in the enzyme
- homogentisic acid oxidase
 - phenylalanine hydroxylase
 - tyrosinase
 - phosphogalactose uridyl transferase
- 22) Inheritance of comb pattern in poultry follows
- complementary gene action
 - supplementary gene action
 - polygenic inheritance
 - lethal gene inheritance
- 23) SRY gene is located on chromosome
- X
 - Y
 - 11
 - 22
-



K23U 2388

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**V Semester B.Sc. Degree (CBCSS – O.B.E. – Regular/Supplementary/
Improvement) Examination, November 2023
(2019 – 2021 Admissions)
CORE COURSE IN ZOOLOGY
5B07 ZLG : Biochemistry and Biophysics**

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures wherever necessary.

- I. Essay questions (**Each** question carries **8** marks). Answer **any two**. (2×8=16)
- 1) With the help of suitable examples, explain enzyme inhibition.
 - 2) Describe the procedure and applications of Column chromatography.
 - 3) Describe various methods for the measurement of radio activity. Comment on the applications of radio isotopes.
 - 4) With a schematic diagram, describe glycolysis.
- II. Short essay questions (**Each** question carries **4** marks). Answer **any two**. (2×4=8)
- 5) Discuss chemiosmotic hypothesis.
 - 6) Mention the underlying principle of NMR spectroscopy.
 - 7) Discuss glycogenolysis.
- III. Short answer questions (**Each** question carries **2** marks). Answer **any six**. (6×2=12)
- 8) Write a brief note on molecular chaperones.
 - 9) State and explain Henderson – Hesselbach equation.
 - 10) What are isozymes ? Provide one example.
 - 11) Discuss cell fractionation.
 - 12) Discuss the oxidation of glycerol.
 - 13) What are cerebrosides ? State one function.
 - 14) Mention the unique aspects of a phase contrast microscope.
 - 15) List some applications of Thin Layer Chromatography.

P.T.O.



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**V Semester B.Sc. Degree (CBCSS – O.B.E. – Regular/Supplementary/
Improvement) Examination, November 2023
(2019 – 2021 Admissions)
CORE COURSE IN ZOOLOGY
5B06ZLG : Animal Physiology**

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures *wherever* necessary.

- I. Essay questions. **Each** question carries **8** marks. Answer **any two**. **(2×8=16)**
- 1) Elaborate the ultrastructure of skeletal muscle. Describe the events associated with muscle contraction.
 - 2) Elaborate the process of urine formation.
 - 3) Write an essay on the major endocrine glands in man and their associated hormones.
 - 4) Explain how a nerve impulse is conducted along a nerve fibre.
- II. Short Essay. **Each** question carries **4** marks. Answer **any two**. **(2×4=8)**
- 5) Explain sliding filament theory.
 - 6) Explain oestrus cycle.
 - 7) Explain how carbon dioxide is transported in human body.
- III. Short answer questions. **Each** question carries **2** marks. Answer **any six**. **(6×2=12)**
- 8) Define ossification. Which are the types of ossification ?
 - 9) Differentiate between uniport and symport system.
 - 10) Write a note on placental hormone.
 - 11) Which are the functions of connective tissue ?
 - 12) What is the peculiarity of SA node ?
 - 13) Define summation of action potential.
 - 14) Write a short note on cholecystikinin.
 - 15) Define osmoconformers.

P.T.O.



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V Semester B.Sc. Degree (C.B.C.S.S. – O.B.E. – Regular/Supplementary/
Improvement) Examination, November 2023

(2019-2021 Admissions)

CORE COURSE IN ZOOLOGY

5B 05 ZLG : Evolution, Ethology and Research Methodology

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures wherever necessary.

SECTION – A
(Evolution and Ethology)

- I. Essay questions. (**Each** question carries **8** marks) Answer **any 1**. (1×8=8)
- 1) Elaborate various evidence of organic evolution.
 - 2) Explain different types of learned behaviours.
- II. Short essay. (**Each** question carries **4** marks) Answer **any 1**. (1×4=4)
- 3) Explain major postulates and criticisms of Lamarckism.
 - 4) Discuss Oparin theory and Miller-Urey experiment.
- III. Short answer questions. (**Each** question carries **2** marks) Answer **any 3**. (3×2=6)
- 5) Differentiate Batesian mimicry and Mullerian mimicry.
 - 6) Write notes on sympatric speciation.
 - 7) Comment on the characteristics of Neanderthal man.
 - 8) What is mitochondrial eve hypothesis ?
- IV. Multiple choice questions. (**Each** question carries **0.5** mark) Answer **all**. (4×0.5=2)
- 9) What, according to Darwin is the primary driving force behind speciation ?
 - a) Successful, continuous and minor variations
 - b) Successful, discontinuous and major variations
 - c) Sudden mutations
 - d) Variations due to constant use or disuse

P.T.O.



- 10) _____ is the random evolutionary fluctuations in the allelic frequencies of a small population.
- Adaptive radiation
 - Genetic drift
 - Kin selection
 - None of these
- 11) The mimicking Monarch butterfly by Viceroy butterfly is an example for
- Concealing mimicry
 - Warning mimicry
 - Aggressive mimicry
 - Alluring mimicry
- 12) Workers of honeybees are
- Fertile females
 - Sterile females
 - Sterile males
 - Sterile males and females

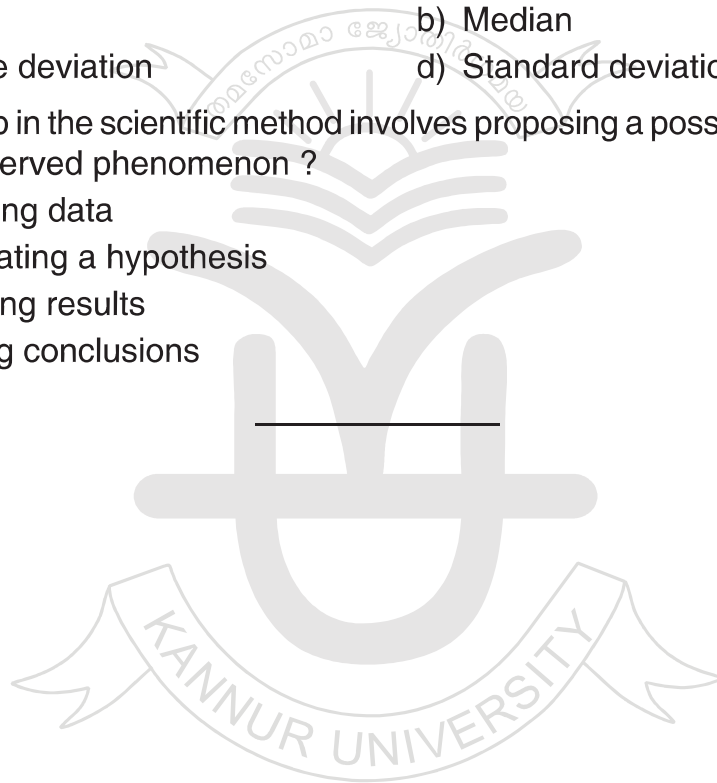
SECTION – B
(Research Methodology)

- I. Essay questions. (**Each** question carries **8** marks.) Answer **any 1**. (1×8=8)
- 13) What are the different sampling methods used in biostatistics?
- 14) Explain the major steps in scientific method.
- II. Short essay. (**Each** question carries **4** marks.) Answer **any 1**. (1×4=4)
- 15) Explain the different types of diagrammatic representations.
- 16) Write notes on the structure of a scientific paper.
- III. Short answer questions. (**Each** question carries **2** marks.) Answer **any 3**. (3×2=6)
- 17) What is repeatability and replication ?
- 18) What is tabulation ?
- 19) What is peer review ?
- 20) What is null hypothesis ?



IV. Multiple choice questions. (**Each** question carries **0.5** mark.) Answer **all**. (**4×0.5=2**)

- 21) Which measure of central tendency is least affected by outliers in a dataset ?
a) Mean b) Median c) Mode d) Standard deviation
- 22) Which section of a scientific paper provides a detailed explanation of how the research was conducted and the procedures followed ?
a) Abstract b) Introduction c) Methods d) Conclusion
- 23) Which measure of dispersion provides a measure of how much individual data points deviate, on average, from the mean of a dataset ?
a) Range b) Median
c) Quartile deviation d) Standard deviation
- 24) Which step in the scientific method involves proposing a possible explanation for an observed phenomenon ?
a) Collecting data
b) Formulating a hypothesis
c) Analysing results
d) Drawing conclusions





K21U 4572

V Semester B.Sc. Degree CBCSS (OBE) Regular
Examination, November 2021
(2019 Admn. Only)
(Core Course in Zoology)
5B06 ZLG : ANIMAL PHYSIOLOGY

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures *wherever* necessary.

- I. Essay questions (**Each** question carries **8** marks). Answer **any two**.
- 1) Briefly explain the ultra-structure of skeletal muscle fibre and the process of muscle contraction.
 - 2) Give an account of urine formation and its hormonal control.
 - 3) Describe the digestion of carbohydrate, protein and lipid.
 - 4) Explain the blood clotting mechanism. (2×8=16)
- II. Short essay (**Each** question carries **4** marks). Answer **any two**.
- 5) Describe the mechanism of nerve impulse transmission,
 - 6) Describe the transport of oxygen and carbon dioxide.
 - 7) Briefly explain menstrual cycle and its hormonal control. (2×4=8)
- III. Short answer questions (**Each** question carries **2** marks). Answer **any six**.
- 8) Mention the hormones of Pancreas and its functions.
 - 9) Distinguish between uniport and symports.
 - 10) Write a brief note on pituitary hormones and its functions.
 - 11) Comment on ECG.
 - 12) Comment on the structure and types of cartilages.
 - 13) Briefly explain muscle twitch.
 - 14) Distinguish between osmoregulators and osmoconformers.
 - 15) Briefly explain the two types of protein energy malnutrition. (6×2=12)
- IV. Multiple choice questions (Each question carries **0.5** mark). Answer **all**.
- 16) Starch is converted into maltose by the action of
- a) Invertase b) Amylase c) Sucrase d) Maltase

P.T.O.



- 17) The volume of air breathed in and out during normal breathing is called
- a) Vital capacity
 - b) Tidal volume
 - c) Expiratory reserve volume
 - d) Inspiratory reserve volume
- 18) The pacemaker of the heart is
- a) Bundle of His
 - b) Purkinje fibres
 - c) AV node
 - d) SA node
- 19) In ureotelic animal, urea is formed by
- a) Ornithine cycle
 - b) Cori's cycle
 - c) Krebs's cycle
 - d) EM pathway
- 20) During the ovulatory phase, the structure called corpus luteum is formed from
- a) Endometrium
 - b) Epididymis
 - c) Ruptured Graffian follicle
 - d) Cowper's gland
- 21) Cushing's syndrome is due to the hyper secretion of
- a) Thyroxine
 - b) Adrenaline
 - c) Cortisol
 - d) Aldosterone
- 22) The exchange of respiratory gases in the lungs occur in
- a) Trachea
 - b) Alveoli
 - c) Bronchi
 - d) Bronchioles
- 23) Which of the following is a gastro intestinal hormone ?
- a) Rennin
 - b) Ptyalin
 - c) Secretin
 - d) Trypsin (8×0.5=4)
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K21U 4573

Reg. No. :

Name :

**V Semester B.Sc. Degree CBCSS (OBE) Regular Examination, November 2021
(2019 Admn. Only)
CORE COURSE IN ZOOLOGY
5B07 ZLG : Biochemistry and Biophysics**

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures *wherever necessary*.

- I. Essay Questions. (**Each** question carries **8** marks) Answer **any two**.
- 1) Write an essay on the mechanism of enzyme action and enzyme inhibition.
 - 2) Give an account on carbohydrate metabolism.
 - 3) Explain the principle, application and comment on different types of centrifuge.
 - 4) Explain the principle of chromatography and comment on the different types of chromatography. (2×8=16)
- II. Short essay questions. (**Each** question carries **4** marks) Answer **any two**.
- 5) Comment on the principle and working of Phase contrast microscope.
 - 6) Classify hormones based on their chemical nature and give examples.
 - 7) Comment on the different methods used for the measurement of radioactivity. (2×4=8)
- III. Short answer questions (**Each** question carries **2** marks) Answer **any six**.
- 8) Define Beer-Lambert law.
 - 9) What is PAGE ?
 - 10) Comment on Camera lucida.
 - 11) Differentiate between TEM and SEM.
 - 12) Comment on the Ramachandran plot.
 - 13) Comment on B-complex vitamins.
 - 14) What are Prostaglandins ?
 - 15) Give an account on buffers. (6×2=12)

P.T.O.



IV. Multiple choice questions. (Each question carries 0.5 marks) Answer all.

- 16) Synthesis of glucose from fats and proteins is known as
a) Gluconeogenesis b) Glycogenesis
c) Glycolysis d) Glycogenolysis
- 17) Which among the following is NOT a vital stain ?
a) Janus green B b) Methylene blue
c) Neutral red d) Acetocarmine
- 18) Pentose Phosphate Pathway is also known as
a) HMP shunt b) Krebs-Hansleit cycle
c) EMP pathway d) Electron Transport system
- 19) Who proposed the Chemiosmotic hypothesis of ATP synthesis ?
a) Michelis-Menton b) Peter Mitchell
c) Handerson d) Embden-Meyerhof
- 20) Alpha helix and Beta pleated sheet represents which structure of proteins ?
a) Primary structure b) Secondary structure
c) Tertiary structure d) Quaternary structure
- 21) Which among the following is an example of glycolipid ?
a) Cephalin b) Cholesterol
c) Lecithin d) Gangliosides
- 22) The lens system in Electron microscope include
a) Condenser, objective and ocular
b) Condenser and objective
c) Condenser, objective and projector
d) Condenser and projector
- 23) Which among the following is NOT a separation technique ?
a) Centrifugation b) Chromatography
c) Spectrophotometer d) Electrophoresis

(8×0.5=4)



K21U 4571

Reg. No. :

Name :

V Semester B.Sc. Degree CBCSS (OBE) Regular

Examination, November 2021

(2019 Admn. Only)

CORE COURSE IN ZOOLOGY

5B 05 ZLG : Evolution, Ethology and Research Methodology

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures wherever necessary.

SECTION – A

(Evolution and Ethology)

I. Essay Questions (**Each** question carries **8** marks) answer **any one**.

1) Explain various types of learning in animals.

2) Write an essay on evolution of human.

(1×8=8)

II. Short Essay (**Each** question carries **4** marks) answer **any one**.

3) Explain the various factors that upset Hardy-Weinberg equilibrium.

4) Explain Darwin's Theory and its criticism.

(1×4=4)

III. Short answer questions (**Each** question carries **2** marks) answer **any three**.

5) What is meant by adaptive radiation ? Give an example.

6) Write a brief note on fossil dating.

7) What is molecular clock ?

8) What is waggle dance ?

(3×2=6)

P.T.O.

IV. Multiple Choice Questions (**Each** question carries **0.5** mark) answer **all**.

- 9) The decrease in response to repeated or continuous stimulation is called
- a) Instinct
b) Habituation
c) Maturation
d) Imprinting
- 10) Because of difference in peak breeding time, 5 species of frogs rarely produce interspecific hybrids. The isolating mechanism is
- a) behavioral
b) ecological
c) geographical
d) temporal
- 11) According to abiogenesis life originates from
- a) pre-existing life
b) chemicals
c) non-living matter
d) extra-terrestrial life
- 12) Continuity of "Germplasm" theory was given by
- a) De Vries
b) Weismann
c) Darwin
d) Lamarck
- (4×0.5=2)**

SECTION – B
(Research Methodology)

I. Essay Questions (**Each** question carries **8** marks) answer **any one**.

- 13) Write essay on measures of central tendency.
- 14) Explain the major steps of scientific method. **(1×8=8)**

II. Short Essay (**Each** question carries **4** marks) answer **any one**.

- 15) Write down the principles of experimentation.
- 16) What are the different types of sampling methods ? **(1×4=4)**

III. Short answer questions (**Each** question carries **2** marks) answer **any three**.

- 17) Define pseudo science.
- 18) Comment on scientific temper.
- 19) What is Plagiarism ?
- 20) What is ANOVA ? **(3×2=6)**



IV. Multiple Choice Questions (**Each** question carries **0.5** mark) answer **all**.

21) Basing conclusions without any bias and value judgment is

- a) Specificity
- b) Objectivity
- c) Values
- d) Facts

22) The difference between a statistic and the parameter is called

- a) Non-random
- b) Probability
- c) Sampling error
- d) Random

23) The ratio between experimental and observed results is represented by

- a) theta value
- b) Chi- square
- c) variance ratio
- d) correlation

24) A graphical representation of a frequency distribution is called a

- a) stem and leaf plot
- b) scatter diagram
- c) time-series plot
- d) histogram

(4×0.5=2)



K21U 4574

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**V Semester B.Sc. Degree CBCSS (OBE) Regular Examination, November 2021
(2019 Admn. Only)
CORE COURSE IN ZOOLOGY
5B08 ZLG : Genetics**

Time : 3 Hours

Max. Marks : 40

Instruction : Give illustrations and figures *wherever* necessary.

- I. Essay Questions (**Each** question carries **8** marks) Answer **any two** :
1. Explain a dihybrid cross with suitable example.
 2. What is extranuclear inheritance ? Give a detailed account on extranuclear inheritance by endosymbionts.
 3. What is multiple allelism ? Explain it with a suitable example.
 4. Give a detailed account on autosomal abnormalities of human.
- II. Short Essay Questions (**Each** question carries **4** marks) Answer **any two** :
5. Explain recessive epistasis with suitable example.
 6. Explain crossing over.
 7. Write a brief note on chromosomal aberrations.
- III. Short Answer Questions (**Each** question carries **2** marks) Answer **any six** :
8. Cystic fibrosis.
 9. Complete linkage.
 10. Test cross with suitable example.
 11. Q- banding.
 12. Lyon hypothesis.
 13. Genic balance theory.
 14. Pharmacogenetics.
 15. Holandric trait.

P.T.O.

IV. Multiple Choice Questions (**Each** question carries **0.5** marks) Answer **all** :

16. Klinefelters syndrome in human body is caused by
a) Autosomal aneuploidy b) Sex chromosome aneuploidy
c) Polyploidy d) Point mutation
17. Identify an autosomal dominant trait.
a) Alkaptonuria b) Achondroplasia
c) Thalassemia d) Albinism
18. Identify the traits caused by lethal gene.
a) Comb pattern in chick b) Coat colour in dog
c) Coat colour in mice d) Coat colour in cat
19. Number of Bar bodies in a normal female
a) 1 b) 2 c) 3 d) 4
20. The farther apart two genes are located in a chromosome _____
the opportunity for a chiasma formation between them.
a) Greater b) Lesser c) Double d) None
21. Sex index ratio super male of *Drosophila* is
a) 0.50 b) 0.33 c) 0.67 d) 1.0
22. Nullisomy represents by
a) $(2n-1)$ b) $(2n-2)$ c) $(2n+1)$ d) $(2n+2)$
23. If a colour blind man married a woman carrier for colour blind what would
be the possibility of their daughter would be colour blind
a) 100% b) 75% c) 50% d) 25%
-