

**UNIVERSITY OF BALOCHISTAN QUETTA  
MA/MSC ( ANNUAL) EXAMINATION .2015.**

- Attention:-
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Subject:-

**ZOOLOGY**

Paper:- I (Prev)

Time Allowed :- 3 Hours

**CELL BIOLOGY AND BIOCHEMISTRY**

Max : Marks : 75

**Note** :- Attempt any Five Questions in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

**SECTION –I (OBJECTIVE PORTION 15 MARKS)**

Q. 1: Attempt 15 questions out of 25. All questions carry equal marks.

1. Define cell cycle.
2. What is chemical nature of Ribosome?
3. Define selective permeability of cell membrane.
4. What are Cristae?
5. What is a major function of Golgi body?
6. Differentiate between Nucleolus and Nucleoli.
7. Define Interphase of a cell.
8. Differentiate between Telophase and Anaphase of a cell.
9. Define Reverse Transcription
10. What is a tetrad?
11. *E. coli* stands for?
12. How many are Bases in normal DNA?
13. Define Non sense Codon.
14. Define Cell Theory.
15. Define Mutation
16. Define Glycolysis.
17. Differentiate between DNA and RNA
18. Define Saponification.
19. What is the name of iron free portion of haemoglobin?
20. What is the name of intermediate product produced in the synthesis of glycogen?
21. Define anaerobic respiration.
22. What is importance of Vitamin A?
23. What is measured by pH scale?
24. Where enzymes involved in TCA cycle are located?
25. What is a main catabolic product of purine in man?

**SECTION II (subjective)**

Marks. 60

Time Allowed: 2:20

Note: Attempt any four questions, selecting two questions from each section. All questions carry equal marks.

**Part I (Cell Biology)**

- Q. 2 Define Transcription. Discuss mechanism of transcription in eucaryotes.
- Q. 3 DNA replication is semi autonomous. Discuss.
- Q. 4 Comment on the functions of ribosomes, lysosomes and Golgi bodied.
- Q. 5 Discuss "Mitochondria is the power house of the cell"

**Part II (Biochemistry)**

- Q.6 Why is water essential to living organisms?
- Q. 7 Enumerate steps involved in the synthesis of cholesterol.
- Q. 8 What are the conditions which influence the action of enzymes/
- Q.9. Write a note on any two of the followings,

- a) TCA cycle
- b) Gluconeogenesis
- c) Essential amino acids

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Subject:- ZOOLOGY . Paper:- II(Prev:)  
Time Allowed :- 3 Hours Animal Diversity & Wild Life Max : Marks : 75

**Note** :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

**SECTION –I (OBJECTIVE PORTION 15 MARKS )**

Q.No.1 Short Answers of the following (Attempt any 15)

a) **Differentiate the following:**

- 1) Mesoderm and endoderm
- 2) diploblastic animals and triploblastic animals
- 3) Endemic Species and extinct species
- 4) Wildlife Sanctuary and game reserve
- 5) Radial symmetry and Bilateral symmetry
- 6) Zooflagellates and Sarcodinians

b) **Define the following terms:**

- 7) Invasive sopecies
- 8) Hermaphrodite
- 9) nephridia
- 10) Endangered species
- 11) Swim bladder
- 12) open circulatory system

c) **Write True or False accordingly:**

- 13) Ammonia secreted in aquatic molluscs.
- 14) Nephridia differ from protonephridia because they modify secreted waste material, rather than just remove it.
- 15) During embryonic development the body cavity of annelids arises by a segmental splitting of solid mass of endoderm.
- 16) Some echinoderms brood their eggs
- 17) Cnidarians exhibit two basic body forms called polyp and medusa.
- 18) Phylum Aschelminthes also called Nematoda.

**SECTION –II( SUBJECTIVE PORTION 60- MARKS ) TIME ALLOWED 2:20**

**Attempt any Four (04) questions.**

- 2 Write a brief note on significance of phylum Mollusca
- 3 Discuss 3 classes of Annelida, also give example of each class
- 4 Write a note on Coral reefs
- 5 i) Describe general characteristics of Birds  
ii) Write a note on respiratory system of fish.
- 6 Describe the subclasses of mammals. (Protheria, Metatheria and Eutheria)
- 7 Describe the challenges for protected area Management
- 8 Describe the major threats to wetland of Pakistan
- 9 Write a brief note on habitat management
- 10 Discuss any two endemic species of Pakistan



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Subject:-

**ZOOLOGY**

Paper:- III (Prev)

Time Allowed :- 3 Hours

**Physiology and Animal Behavior .**

Max : Marks : 75

**Note** :- Attempt ALL Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

**SECTION –I (OBJECTIVE PORTION /5 MARKS )**

Q.No.1 Give short answers:- (Attempt any 15)

01. What is hormone?
02. Define homeostasis
03. What is the role of glucagon?
04. Define hibernation
05. What is negative feedback system?
06. What is peristalsis?
07. Define chromatophores
08. What is crop gland?
09. Define interstitial space
10. Define islets of langerhans
11. What is hyperpolarization
12. What is axonal propagation?
13. Discuss angiotensin
14. What is Dipnoan lung?
15. Discuss briefly glomerular filtration rate (GFR)
16. What is mutual vigilance?
17. Why do Animal court?
18. What is synchronization?
19. What is the role of microvillus at intestinal absorption?
20. What are the rectal glands?
21. What is acidosis?
22. Define acclimation
23. What is anoxia?

**Section-II**

**(Subjective Portion 60 Marks)**

**Note: Attempt any four questions from this section. Selecting three questions from part 01 and 01 from part 02. All questions carry equal marks**

**Part – 01**

- Q. NO.02: What is Action Potential? Discuss the types and role of K channels.
- Q. NO.03: What do you know about the chemoreception? Discuss the role of pheromones.
- Q. NO.04: What role the thyroid gland play in vertebrates in secreting  $T_3$  and  $T_4$  in Mammals?
- Q. NO.05: Discuss the mechanism of respiration in fishes
- Q. NO.06: Discuss briefly the myogenic and neurogenic hearts. Also discuss how they differ from each other.
- Q. NO.07: Discuss the important digestive functions of the mid gut in mammals
- Q. NO.08: Discuss the main dietary compounds. Also discuss the essential trace elements required by the body for the digestion.

**Part-02**

Note: attempt any one question from this section each question carry 15 marks.

- Q. NO.09: What are the types of learning behavior?
- Q. NO.10: Write short notes in the following:

1. Conditioning behavior
2. Impact of Hunger on the animals attitude
3. Sexual behavior



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Subject: -

**ZOOLOGY**  
**Genetics and Biostatistics**

Paper: - IV (Previous)

Time Allowed: - 3 Hours

Max: Marks: 75

Note: - Attempt any Five Questions in All But Question No. 1 in Section -I is compulsory and the time for Section- 1 is only 40 Minutes. After Expiry of the Time Paper should be handed over to the supervisory staff.

**SECTION -1 (OBJECTIVE PORTION, 15 MARKS)**

Q.No.1 Write the short answers of the following Questions (Attempt only 15).

1. Define DNA and RNA
2. Define Heterosis
3. What do you mean by Gene
4. Differentiate between homozygous and heterozygous
5. Differentiate between genotype and phenotype
6. Define Multiple allele with one example
7. Enlist the types of transformation in bacteria
8. What do you mean by restriction mapping
9. Draw the structure of plasmid
10. What is genome
11. Define Crossing Over
12. What is mutagens
13. What do you mean by true breeding
14. Enlist the types of Plasmids
15. What is Gene library
16. Give the formula of Z-test
17. Give the formula of T-test
18. Give the formula of Mean
19. Define Range
20. Define Standard Deviation
21. What is gene pool
22. What do you know about gene linkage
23. What are the three basic types of RNA
24. What do you mean by Chromosomal aberration
25. Name two hereditary diseases in Human

**SECTION –II (SUBJECTIVE PORTION 60 MARKS) TIME ALLOWED 2:20**

**Note:** Attempt any four questions, selecting three questions from Part-I and one question from Part-II. All questions carry equal marks; Give your answer with suitable diagrams where necessary.

**Part-I (GENETICS)**

**NOTE:** Attempt any three Questions:

- Q.No.2 How Inbreeding increases the frequency of homozygote and decrease the frequency of heterozygote.
- Q.No.3 Define the Gene therapy with suitable examples.
- Q.No.4 What is an "Operon" concept? Discuss lactose Operon and its control.
- Q.No.5 Write down a detail note on protein synthesis in eukaryotic organisms.
- Q.No.6 Discuss in detail the process of Recombinant DNA technology.
- Q.No.7 Explain Mutation and its types with suitable examples.
- Q.No.8 Short Note on any of two
- Pleiotropism
  - ABO Blood Group System
  - DNA is a three dimensional structure

**Part-II (BIOSTATISTIC)**

**NOTE:** Attempt Only one Question

- Q.No.9 Give the answer of at least two
- Short history of Statistics
  - Uses and misuses of Statistics
  - Hypothetical test and its types
  - Graphical presentation of Biological data
- Q.No.10 Find out the mean, mode, range and standard deviation of the following data  
14, 15, 17, 18, 19, 14, 14, 15, 16, 17



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Subject:-

ZOOLOGY.

Paper:- V(Prev:)

Time Allowed :- 3 Hours

ENVIRONMENTAL BIOLOGY

Max : Marks : 75

**Note** :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

**SECTION –I (OBJECTIVE PORTION 15 MARKS )**

Q.No. 1 Write short answers of the following 15 Questions.

1. BOD
2. Limiting Factors
3. Intra Population
4. Community
5. Ectones
6. Population Ecology
7. Ozone Depletion
8. Humidity
9. Agricultural Revolution
10. Lithosphere
11. Desertification
12. Hydrosphere
13. Sanilisation
14. Eutrophication
15. Homeostasis
16. Fog and Smog
17. Primary pollutant
18. Global Warming
19. Herbicides
20. DDT

**SECTION-II (SUBJECTIVE PORTION 60 MARKS) TIME ALLOWED 2:20**

**Attempt any Four (04) questions**

- Q.No. 2 Define Trophic Level. Describe the different types of Ecological Pyramids with examples.
- Q.No. 3 What are the Natural Resources? Explain the Mineral Resources.
- Q.No. 4 Define Biogeochemical Cycles. Describe the Phosphorus Cycle in detail.
- Q.No. 5 What are the major causes of Air Pollution?
- Q.No. 6 What is Population Dynamics? Explain in detail.
- Q.No. 7 Explain the Inter Specific and Intra Specific relationships
- Q.No. 8 Define Food Chain. Write a detailed note on Food Web.
- Q.No. 9 Explain Ecosystem and describe its various components.
- Q.No. 10 Write a detail note on Heavy Metals and their effect on Aquatic Life.

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Subject:- **ZOOLOGY.**  
Time Allowed :- 3 Hours Developmental Biology

Paper:- VI(Prev.)  
Max : Marks : 75

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

**SECTION –I (OBJECTIVE PORTION 15 MARKS )**

**Q.No.1:-Attempt 15 questions out of 23 questions. All questions carry equal marks.**

- I. Define Ontogenic development.
- II. What is difference between Embryo and Fetus?
- III. What is egg cortex?
- IV. Define preformation theory.
- V. Define polyspermy.
- VI. What is function of acrosomal vesicle?
- VII. Define cell adhesion.
- VIII. What do you mean by compact morula?
- IX. Differentiate between isolecithal and telolecithal eggs.
- X. What is blastocyst?
- XI. What is difference between hypoblast and epiblast?
- XII. Define the term evagination.
- XIII. What do you know about primitive streak?
- XIV. What is Organizer concept?
- XV. Define stem cells.
- XVI. Differentiate between identical and non-identical twins.
- XVII. What is maximum life span of Human?
- XVIII. Define epimorphic regeneration.
- XIX. What is determinate cleavage.
- XX. What do you mean by ICM?
- XXI. Define extra embryonic membranes.
- XXII. What is function of amniotic fluid?
- XXIII. What are the transgenic animals?

P.T.O



**Part- II (Subjective)**

**Time allowed: 2:20**

**Marks: 60**

- Q.No.2:-Discuss in detail the different patterns of cleavage occurred in animals.
- Q.No.3:- What is Gastrulation? Discuss how primitive streak formation occur in birds?
- Q.No.4:- What is neurulation? Discuss the mechanism of the formation of neural tube.
- Q.No.5:- Describe the events of fertilization that occur before sperm-egg fusion.
- Q.No.6:- What is induction? Explain embryonic inductions with suitable examples.
- Q.No.7:- What is prospective fate map? Discuss its mechanism of preparation.
- Q.No.8:- What is metamorphosis? Describe hormonal control of amphibian metamorphosis.
- Q.No.9:- What is infertility? Discuss the causes of male infertility.
- Q.No.10:-What is animal cloning? Explain it with the help of "sheep Dolly" development.

**THE END**

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Subject:-

**ZOOLOGY**

Paper:- **VIII (Final)**

Time Allowed :- 3 Hours

**Evolution and Principles of Systematic**

Max : Marks : 75

**Note** :- Attempt **05** Questions in All But Question No. 1- in section -I is compulsory and the time for Section-I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

**SECTION -I (OBJECTIVE PORTION 15 MARKS)**

Q. No. 1 Write brief answers to any **15 questions** of the following:

1. Define genetic drift.
2. Define macroevolution
3. What is allometry?
4. Define orthogenesis
5. Define mutation
6. What is chronometry?
7. Define natural selection
8. Define divergence
9. Define selection pressure.
10. What is Mullarian mimicry?
11. Define gene frequency.
12. What is role of isolation in evolution?
13. What is a rate in evolution?
14. Define Darwinism?
15. Define systematic.
16. What is downward classification?
17. What is a phenon?
18. What is a taxonomic category?
19. Define a biological species.
20. Define a cohesion species concept.
21. Define a subspecies.
22. What is a homonyme?
23. What is a sibling species?
24. What is a paratype?
25. What is first revisor principle?

**SECTION-II (SUBJECTIVE PORTION, 60 MARKS)**

Attempt any Four Questions,

selecting two questions each from Part-

A and Part-B.

**Part-A (Principles of Systematic Zoology)**

- Q. No. 2 Discuss the impact of "Origin of Species" on shaping of systematics and taxonomy.
- O. No. 3 Discuss the typological species concept.
- O. No. 4 Describe different types of taxonomic characters.
- Q. No. 5 Write short notes on any **three** of the followings:
  - a. Type concept
  - b. Cladistic approach in taxonomy
  - c. Sibling species
  - d. Current trends in taxonomy

**Part-B (Evolution)**

- Q. No. 6 Give a brief overview of different evidences available indicating evolution.
- Q. No. 7 Discuss the Lamarckian theory explaining evolution of biodiversity. How was it modified under Neo-lamarckism.
- Q. No. 8 Discuss Darwinian concept of sexual selection. How was it modified by Fisher's view.
- Q. No. 9 Write short notes on any **three** of the followings:
  - a. Genetic drift and bottleneck effect
  - b. Convergence and natural selection
  - c. Selection patterns
  - d. Isolation and evolution