ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Higher Secondary School Certificate (HSC)

Examination syllabus
&
Model Paper

Zoology
XII

Based on Provincial revised curriculum (Sindh)

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PREFACE

Ziauddin University Examination Board (ZUEB) was established by the Sindh ACT XLI 2018, with the aim of improving the quality of education. The Board administers examinations for the Secondary School Certificate (SSC) and Higher Secondary School Certificate (HSSC) based on the latest Reviewed National Curriculum by Directorate Curriculum Assessment and Research (DCAR) Sindh. ZUEB has a mandate by Ordinance to offer such examination services to English /Urdu and Sindhi medium candidates for SSC and HSSC from private schools in Sindh. This examination syllabus exemplifies ZUEB's commitment to provincial educational goals

The Examination Board has prepared with the help of subject professors, subject wise syllabus. It is important to make the difference between syllabus and curriculum. The syllabus of a subject is considered as a guide for the subject teacher as well as the students. It helps the students understand the subject in detail. It also helps students to anticipate what is expected from them while preparing for the exams.

This examination syllabus brings together all those cognitive outcomes of the Provincial Curriculum statement which can be reliably and validly assessed. While the focus is on the cognitive domain, particular emphasis is given to the application of knowledge and understanding.

The examination syllabus is uploaded on the ZUEB website. This is done to help affiliated schools in planning their teaching. It is the syllabus, not the prescribed textbook which is the basis of the ZUEB examinations. In addition, the ZUEB examination syllabus is used to develop learning support materials for students and teachers. The examination board stand committed to all students who have embarked upon the SSC, and HSSC courses in facilitating their learning outcomes. Our examination syllabus document ensures all possible support.

On the Ziauddin University Examination Board website a tab e –resource is made available which provides resource material in all subjects both in text form in line with the curriculum and also videos on topics to give students access to learn at their own pace and own time. These 15 to 20 minutes videos are prepared around subject concept / topics. These videos are available to the students for revisiting a lesson taught by their teacher or watch it prior to the lesson and as a reinforcement strategy. The work on videos is in progress and new titles will be uploaded.

Please look out for the videos on the given website

Humbly Yours;

Shahbaz Nasim
Curriculum Coordinator

Rationale For the Reviewed Provincial Curriculum

The process of revising the National Curriculum 2006 was initiated in August 2004 when newly elected government of Pakistan decided to introduce education reform in the country. The education reform process included the announcement of new National Education Policy. National Education Census and changing the curricula (Ministry of Education, 2009)

In reality, change in secondary school curriculum was initiated in 2006 and as result, scheme of studies for classes I to XII was reviewed and curriculum of 25 compulsory subjects.

The 18th Amendment to the constitution of Pakistan has reconfigured the federal and provincial relationship by abolishing the "concurrent legislative list". The Act (2010) provides the provinces with strong legislative and financial autonomy in education, health, and other social sectors. Major implication of the 18th Amendment for education is that the curriculum, syllabus, planning, policy, centres of excellence and standards of education will fall under the purview of the provinces. This was a big step forward for education.

In Sindh the Curriculum review team was assigned a task by the School Education Department, Government of Sindh to review the National Curriculum 2006 for all subjects and prepare a revised version that best suits the needs of the students teachers and meets the spirit of the 18th amendment.
Subject wise curriculum review committees were formed. Curriculum review team critically examined the contextual and textual parts and aligned the different sections horizontally and vertically of the Curriculum. The Bureau of Curriculum (BOC) played vital role in organizing the workshops and meetings at Hyderabad for the completion of task. The positive support from a number of educationists, researchers and teachers helped in completing the mammoth task of curriculum revision.
On the DCAR website http://dcar.gos.pk/BoC_Other_Pages/curriculum_dev.html the national curriculum as well as the revised curriculums are all placed for easy reference.

The Ziauddin University Examination Board Examination syllabi for SSC and HSSC are prepared with the Sindh Revised curriculum. Up till now following subject text books have been developed as per the revised curriculum.

AIMS AND OBJECTIVES:

AIMS:

- The curriculum of Biology at grade XI-XII aims to help individual students develop:
- A scientific understanding of the living world
- Mental and motor abilities appropriate to the acquisition and use of biological Understanding
- An appreciation of the products and influences of science and technology, balanced by a concern for their wise application
- An understanding of the nature and limitations of scientific activity
- An ability to apply biological understanding to appropriate problems (including those of everyday life) and to approach those problems in rational ways
- Respect for evidence, rationality and intellectual honesty
- Capacities to express themselves coherently and logically, both orally and in writing, and to use appropriately modes of communication characteristic of
  Scientific work
- An ability to work effectively with others.

OBJECTIVES:

- A statement of objectives relevant to each of the general aims is listed below. The sequence of Objectives used here should not be taken as indicating relative weightings.

Understanding the Living World:

- Students should understand the scientific concepts inherent in the theme for each chapter to
- be covered well enough to be able to:
- state, exemplify and interpret the concept
- use appropriately, fundamental terms and classifications related to the concept cite, and explain or interpret, scientific evidence in support of the concept.

Appropriate Mental and Motor Abilities:

Students should show some ability to:

- formulate questions that can be investigated by gathering first or second-hand data
- find relevant published background information
- formulate hypotheses and make predictions from them
- plan an investigation and carry out the planned procedures
- use the motor skills required to carry out investigations
- observe phenomena, and describe, measure and record these as data
- classify, collate and display data
- Interpret and construct visual representations of phenomena and relationships (diagrams, Graphs, flow charts, physical models etc.)
- Analyze data and draw conclusions
- Evaluate investigative procedures and the conclusions drawn from investigations.

Understanding the Nature and Limitations of Scientific Activity:

For each of the facets of scientific activity selected for study, students should:

- Describe and exemplify it

- Use appropriately any fundamental terms and classifications related to it.
- Recognize that the problem-solving nature of science has limitations
- Acknowledge that people engaged in science, a particularly human enterprise, have the
- Characteristics of people in general.

Appreciation of the Influences of Science and Technology:

Students should:

- Recognize that the technology resulting from scientific activity influences the quality of Lifestyle and economic development through or by improvements in medical/health care,
- Nutrition, agricultural techniques
- understand that these influences may be the result of unforeseen consequences, rapid Exploitation or rapid cultural change.
  Realize that advances in technology require judicious application.

Ability to apply Understanding to Problems:

Students should:

- Recognize that biological knowledge and scientific approaches have relevance to many Situations in everyday life
- Recognize when biological knowledge is relevant to a problem
- Recognize when a scientific approach is relevant to a problem
- Select and apply appropriate biological knowledge and skills to clarify and help produce solutions to problems, especially the personal and social problems of everyday life to
- Which such knowledge and skills can apply
- Use thoughtful, rational strategies for decision-making in those everyday situations to which both biological knowledge and value positions are relevant.

Respect for Evidence, Rationality and Intellectual Honesty:

- Given the number of emotive issues in the area of biology, students should display
- Respect for evidence, rationality and intellectual honesty.

Capacities to Communicate:

Students should:

- Comprehend the intention of a scientific communication, the relationships between its
- Parts and its relationship to what they already know
- Select the relevant parts from a communication
- Translate information from communications in particular modes (e.g. Spoken word, written Word, tables, graphs, flow sheets, diagrams) to other modes
- Structure information and use appropriate modes (including the spoken word, writing And diagrams) to communicate it.

Ability to work with Others:

Students should participate in group work in such a way that he or she:

- Shares the responsibility for achieving a group task
- shows concern for the fullest possible participation of each group member.

ZIAUDDIN UNIVERSITY EXAMINATION BORD

SLOs CATEGORIZATION

XII-BOTANY

Detailed Syllabus

Chapter	Topics	Student learning outcomes
Ch#1 HOMEOSTASIS:	• Homeostasis • Osmoregulation • Excretion • Urinary System of Man: • Disorders of kidney: • Thermoregulation:	• Describe three elements i.e. receptors, control center and effectors which operate homeostatic mechanisms. • Relate the homeostatic mechanisms with the negative and positive feedback systems. • Draw a flow chart to show negative feedback of homeostatic mechanisms by taking an example of hormone. • Define osmoregulation • Differentiate between osmoconformers and osmoregulator • Explain the problems faced osmoregulators.(hypertonic, hypotonic and isotonic condition) • Explain the different methods of osmoregulation found in freshwater, marine water and terrestrial habitats. • List various nitrogenous compounds excreted during the process of excretion. • Explain the nature of excretory products in relation to habitat. • Explain different organs of urinary system. Describe the structure of kidney and relate it with its function. • Explain the detailed structure of nephron. • Explain the processes of glomerular filtration, selective re-absorption and tubular secretion as the events in kidney functioning. • Explain that concentration of urine is regulated by counter-current and hormonal mechanisms. • Explain the causes and treatments of kidney stones. • Outline the causes of kidney failure. • Explain in detail the mechanism and problems related to dialysis. • Define thermoregulation and explain its needs.

		• Classify animals on the basis of the source of body's heat i.e. ectotherms and endotherms.
Ch#2 **SUPPORT AND MOVEMENT:**	• Human skeleton: • Disorders of skeleton • Muscles •	• Explain support, movement and locomotion. • Describe the structure of bone and compare it with that of cartilage. • Explain the functions of osteoblasts, osteoclasts and osteocytes. • Identify the main divisions of human skeleton. • List the bones of appendicular and axial skeleton of man. • Describe three types of joints i.e. fibrous joints, cartilaginous joints and synovial joints and give example of each. • Describe the disorders of human skeleton (disc-slip, spondylosis, sciatica, arthritis) and their causes. • State different types of fractures (simple, compound and complicated) and describe the repair process of simple fractures. • Describe the injuries in joints (dislocation and sprain) and their first aid treatment. • Describe the first-aid treatment for fracture. • Define muscle and its types. • Compare smooth muscles, cardiac muscles and skeletal muscles. • Explain the sliding filaments model of muscle contraction. • Describe the action of antagonistic muscles in the movement of knee joint. • Explain muscle fatigue, cramps and tetany. • Describe locomotion in animals. • Draw a diagram of sarcomere and label its parts.
Ch#3 **COORDINATION AND CONTROL:**	• Steps involved in Nervous coordination: • Neurons • Nerve impulse • Synapse • Basic organization of Human nervous system:	• Recognize receptors as transducers sensitive to various stimuli. • Identify the three neurons (sensory, intermediate, motor) involved in nervous transmission. • Identify muscles and glands as the effectors. • Predict from every day experience what various kinds of receptor can be found in human body.

	• Effect of drugs on coordination: • Disorders of nervous system • Hormones • The endocrine system in man: •	• Describe the detailed structure of a sensory neuron, associative and a motor neuron and relate the specialization in structures with functions. • Differentiate between myelinated and non-myelinated neurons. • Explain the process of reflex action and the function of the different types of neurons with the help of a reflex arc. • Draw and label the structure of three kinds of neuron. And Define nerve impulse. • Name the factors responsible for the resting membrane potential of neuron. • Describe the role of local circuits in propagation of nerve impulse node to node (saltatory conduction) of nerve impulse • Describe the structure of synapse. • Classify neurotransmitters as inhibitory and excitatory and list some common examples. • Identify the main components of the nervous system. • Explain briefly the functions of major divisions of brain. • Describe the architecture of human brain and compare its sectional view with that of the spinal cord. • Describe cranial and spinal nerves in man. • Explain the structure, types and functions of autonomic nervous system. • Explain the structure and functioning of the receptors for smell, taste and touch/ pain. • Draw a labeled diagram of the human brain. • Compare the use and abuse of drugs with respect to nicotine. • Describe the causes, symptoms and treatment of and Alzheimer disease, Parkinson's disease, epilepsy as degenerative disorder) • State the role of hormones as chemical messengers.

		• Describe the chemical nature of hormones and correlate it with important hormones • Describe the functions of the hormones secreted by the endocrine tissue other than the mentioned above.
Ch#4 REPRODUCTION:	• Human reproductive system: • Disorders of reproductive system: • Sexually transmitted diseases:	• Describe the structures of male reproductive system identifying their functions. • Explain the principal reproductive hormones of human male and explain their role in the maintenance and functioning of reproductive system. • Discuss and compare human female reproductive cycles. • Explain the structures of female reproductive system and describe their functions. • Describe the menstrual cycle emphasizing the role of hormones. • Explain that in-vitro fertilization (test tube babies) is one of the methods to solve the problem of infertility. • Describe the causes, symptoms and treatment of gonorrhea and syphilis. • Explain AIDS as a worldwide sexually transmitted disease.
Ch#5 DEVELOPMENT AND GROWTH:	Embryonic development Control of development Pregnancy Abnormal development Aging	• Explain stages of development in animals • Explain the process and site of fertilization. • Describe cleavage and relate it with amount of yolk (chick) • Explain blastula/blastocyst with emphasis on segmentation cavity. • Explain the events of gastrulation. • List the tissues and organs formed from the three germ layers. • State the events of neurulation. • Describe the formation of neural crest and list the structures that are derived from neural crest cells. • Define organogenesis (Neurulation). • Give a brief overview of the work done by Hans Spemann in the discovery of induction. • Define organizers and differentiate between primary and secondary induction.

		• Describe the structural details of placenta and umbilical cord. • Differentiate the terms gestation and pregnancy. • Describe the maternal derived abnormalities (abnormal development. • Define the term aging. • Rationalize aging as a part of normal development. • State the changes (graying, thinning hair, pigmented patches of skin, slowed movements, fading vision, impaired hearing, reduced ability to adapt to stress and decreased resistance to infections) as primary aging. • List some changes that occur at the system and those that occur at cellular level during aging.
EVOLUTION:	• Evolution of the concepts of evolution: • Evidences of evolution • Lamarckism • Darwinism: • Neo-darwinism:	• Describe creationism and the theory of evolution as two contradictory ideas. • Explain how biogeography provides an evidence for evolution. • Describe the evidences of evolution that come from paleontology, comparative anatomy and molecular biology. • Differentiate between convergent and divergent evolution on the basis of inheritance of the homologous and analogous structures. • Justify Lamarck as an early proponent of evolution. • Describe the theory of inheritance of acquired characters, as proposed by Lamarck. • Outline the steps of the evolution of the giraffe, as illustrated in Lamarckism. the drawbacks in Lamarckism. the theory of natural selection as proposed by Darwin. State the drawbacks of Darwinism.

		Describe the assumptions of the Hardy-Weinberg theorem and relate these to the factors that change the allelic frequencies of the population. Explain the concept of genetic drift (neutral selection) and Endangered species
MAN AND HIS ENVIRONMENT:	1. Human impact on environment: 2. Environmental resource and their depletion: 3.	• Relate the need of the nuclear power to the scarcity of fossil fuels. • State the problems of using nuclear power (surety of safe operation and safe disposal of thewastes). • Describe the causes of the increasing concentration of carbon dioxide in the world's atmosphere. • Correlate the increasing CO2 concentration with the global warming and describe its long term effects. • Explain the causes and effects of acid rain. State the sources of chlorofluorocarbons and their role in the depletion of ozone. • Explain the effects of ultraviolet radiation as a serious human healthconcern. • Narrate the incidence when one of the four reactors of the Chernobyl nuclear power plant blew up in 1986. • Distinguish between renewable and non-renewable environmental resources. • Describe how man is responsible for the depletion of environmental resources. • Describe the conventional and non-conventional energy resources.
Ch#9 BIOTECHNOLOGY:	• Cloning of genes: • DNA sequencing: • Genome maps: • Tissue culture: • Gene therapy	• Define gene cloning and state the steps in gene cloning. • Describe the techniques of gene cloning through recombinant DNA technology. • Explain the role of restriction endonucleases and DNA ligases in gene cloning. • Explain the properties and the role of vectors in recombinant DNA technology. • State the steps for the integration of DNA insert into the vector.

		• Briefly state the technique applied for the selection of the vectors that take up the DNA insert. • Describe the steps involved in gene amplification through polymerase chain reaction. • Describe the principles of Gel Electrophoresis as being used in gene sequencing. • Describe the goals of the human genome project. • Define following terms related to plant tissue culture; callus. • Explain tissue culture and differentiate between the organ culture and cell culture. • Explain the role of successful gene therapy for cystic fibrosis and Huntington's disease.

Ziauddin University Examination Board
Grade XII
ZOOLOGY
Scheme of assessment

Maximum marks: 45

Section "A" (Multiple Choice questions)

Multiple choice questions (MCQs) **(0.5 x 18 = 9)**

- Attempt 16 MCQs: Each carries equal marks

Section "B" (Constructed Response questions)

Constructed Response questions (CRQs) **(2 x 9=18)**

Attempt any **FIVE(05)** Questions from Reasoning questions and **FOUR**(04) from Nonreasoning questions.

All questions carry equal marks. Seven questions will be given in the Reasoning section and Six will be given in the non-reasoning section.

Section "C" (Extended Response Questions)

Extended response questions (ERQs) **(9 x 2 = 18)**

- Attempt any 2 questions out of four questions
- Each consist of eight (08) marks

DEFINITIONS OF COGNITIVE LEVELS

Remember

Remembering is the act of retrieving knowledge and can be used to produce things like definitions or lists. The student must be able to recall or recognise information and concepts. The teacher must present information about a subject to the student, ask questions that require the student to recall that information and provide written or verbal assessment that can be answered by remembering the information learnt.

Question Stems

- Can you name all the …?
- Describe what happens when …?
- How is (are) …?
- How would you define …?
- How would you identify …?
- How would you outline …?
- How would you recognise…?
- List the … in order.
- What do you remember about …?
- What does it mean?
- What happened after?
- What is (are) …?
- What is the best one?
- What would you choose …?
- When did …?
- Where is (are) …?
- Which one …?
- Who spoke to …?
- Who was …?
- Why did …?

Understand

The next level in the taxonomic structure is Understanding, which is defined as the construction of meaning and relationships. Here the student must understand the main idea of material heard, viewed, or read and interpret or summarise the ideas in their own words. The teacher must ask questions that the student can answer in their own words by identifying the main idea.

Question Stems

- Can you clarify…?
- Can you illustrate …?
- Condense this paragraph.
- Contrast …
- Does everyone think in the way that … does?
- Elaborate on …
- Explain why …
- Give an example
- How can you describe
- How would you clarify the meaning
- How would you compare …?
- How would you differentiate between …?
- How would you describe…?
- How would you generalise…?
- How would you identify …?
- Is it valid that …?
- Is this the same as …?
- Outline …
- Select the best definition
- State in your own words
- This represents …
- What are they saying?
- What can you infer from …?
- What can you say about …?
- What could have happened next?
- What did you observe?

	• What does this mean? • What expectations are there? • What information can you infer from…? • What is the main idea of …? • What restrictions would you add? • What seems likely? • What seems to be …? • What would happen if …? • What would happen if …? • Which are the facts? • Which statements support …?
Apply The third level in Bloom's taxonomy, Applying, marks a fundamental shift from the pre-Bloom's learning era because it involves remembering what has been learnt, having a good understanding of the knowledge, and applying it to real-world exercises, challenges or situations. Students must apply an abstract idea in a concrete case to solve a problem or relate it to prior experience. The teacher must provide opportunities for students to use theories and problem-solving techniques in new situations and review and check their work. Assessment questions should be provided that allow students to define and solve problems. **Question Stems** • Can you group by characteristics such as …? • Choose the best statements that apply • Clarify why … • Do you know of another instance where …? • Draw a story map • Explain why a character acted in the way that he did • From the information given, can you develop a set of instructions about …? • How could you develop …? • How would you change …? • How would you demonstrate…? • How would you develop … to present ? • How would you explain …?	**Analyse** Analysing is the cognitive level where students can take the knowledge they have remembered, understood and applied, then delve into that knowledge to make associations, discernments or comparisons. Students should break down a concept or idea into parts and show relationships between these parts. Teachers must give students time to examine concepts and their requisite elements. Students are required to explain why they chose a solution. **Question Stems** • Can you distinguish between …? • Can you explain what must have happened when …? • Determine the point of view, bias, values, or intent underlying the presented material • Discuss the pros and cons of … • How can you classify … according to …? • How can you compare the different parts? • How can you sort the different parts…? • How is … connected to …? • How is … similar to …? • How would you categorise…? • How would you explain ? • If … happened, what might the ending have been? • State the point of view of … • What are some of the problems of …?

• How would you modify …? • How would you present…? • How would you solve … ? • Identify the results of … • Illustrate the … • Judge the effects of … What would result …? • Predict what would happen if … • Tell how much change there would be if … • Tell what would happen if … • What actions would you take to perform …? • What do you think could have happened next? • What examples can you find that ? • What other way would you choose to …? • What questions would you ask of …? • What was the main idea …? • What would the result be if …? • Which factors would you change if …? • Who do you think…? • Why does this work? • Write a brief outline … • Write in your own words …	• What assumptions …? • What can you infer about…? • What can you point out about ? • What conclusions …? • What do you see as other possible outcomes? • What does the author assume? • What explanation do you have for …? • What ideas justify the conclusion? • What ideas validate…? • What is the analysis of …? • What is the function of …? • What is the problem with …? • What motive is there? • What persuasive technique is used? • What statement is relevant? • What was the turning point? • What were some of the motives behind …? • What's fact? Opinion? • What's the main idea? • What's the relationship between? • Which events could not have happened? • Why did … changes occur? • Why do you think ?

BLOOMS TAXONOMY WITH EXAMPLES

Conclusion

If you are a teacher looking for ways to engage your students in learning, this LIST of questions might be interesting for your classroom practice. Bloom's Taxonomy question stems can help elicit higher-order thinking skills and promote critical thinking among learners at different taxonomy levels. These question stems can also encourage students to think about their knowledge through reflection before answering questions.

ACTION WORDS FOR COGNITIVE LEVELS

Knowledge	Understand	Apply	Analyze	Evaluate	Create
					
define	explain	solve	analyze	reframe	design
identify	describe	apply	appraise	criticize	compose
describe	interpret	illustrate	judge	evaluate	create
label	paraphrase	modify	support	order	plan
list	summarize	use	compare	compare	combine
name	classify	calculate	decide	classify	formulate
state	compare	change	discriminate	contrast	invent
match	differentiate	choose	recommend	distinguish	hypothesize
recognize	discuss	demonstrate	summarize	infer	substitute
select	distinguish	discover	assess	separate	write
examine	extend	experiment	choose	explain	compile
locate	predict	relate	convince	select	construct
memorize	associate	show	defend	categorize	develop
quote	contrast	sketch	estimate	connect	generalize
recall	convert	complete	grade	differentiate	integrate
reproduce	demonstrate	construct	measure	divide	modify
tabulate	estimate	dramatize	predict	order	organize
tell	express	interpret	rank	prioritize	prepare
Copy	identify	manipulate	score	survey	produce
discover	indicate	paint	select	calculate	rearrange

duplicate	infer	prepare	test	conclude	rewrite
enumerate	relate	teach	argue	correlate	adapt
listen	restate	act	conclude	deduce	anticipate
observe	select	collect	consider	devise	arrange
omit	translate	compute	critique	diagram	assemble
read	ask	explain	debate	dissect	choose
recite	cite	list	distinguish	estimate	collaborate
record	discover	operate	editorialize	evaluate	facilitate
repeat	generalize	practice	justify	experiment	imagine
retell	group	simulate	persuade	focus	intervene
visualize	illustrate	transfer	rate	illustrate	make
	judge	write	weigh	organize	manage
	observe			outline	originate
	order			plan	propose
	report			question	simulate
	represent			test	solve
	research				support
	review				test
	rewrite				validate
	show				

ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

MODEL PAPER 2023

SUBJECT: ZOOLOGY	GRADE: XII	MAX. MARKS: 45	TIME: 2 HOURS

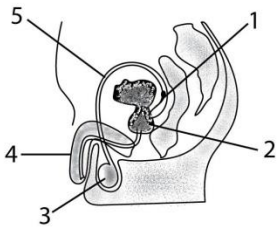
SECTION 'A' (COMPULSORY) MULTIPLE CHOICE QUESTIONS (MCQ'S)

Time: 20 minutes **Marks: 09**

Note: (i). Attempt all Questions from this section.
(ii) Shade **ONE** letter for each question. Make sure you put your answer in line with the correct question number.
(iii). Write the code of your question paper in **bold letters** in the beginning of the answer script.

Choose the correct answer for each from the given options:

1. Which of these is not an endocrine property?
   a) Hormones reach target cells through blood
   b) Slow and cyclic effects
   c) Rapid acting effects
   d) Effects are caused by chemicals
2. Which of the following substances can not pass through the walls of glomerulus?
   a) Albumin
   b) Globulin
   c) Blood proteins
   d) All of these
3. Exoskeleton in arthropods is made up of:
   a) Chitin
   b) Cellulose
   c) Calcium carbonate
   d) Silica
4. Which of the following characteristics help a star fish move?
   a) Pentaradial
   b) Coelom
   c) Water vascular system
   d) Spines on body surface
5. Pons is involved in all of the following activities except:
   a) Muscle coordination
   b) Breathing
   c) Thirst and hunger
   d) Facial expressions
6. Male secondary sexual characters are controlled by:
   a) Aldosterone
   b) Androgens
   c) Cortisol
   d) Adrenaline
7. This striated voluntary muscle does not have an antagonistic pair:
   a) Rotator
   b) Flexor
   c) Abductor
   d) Retractor
8. Study of abnormal development is called:
   a) Teratology
   b) Gerontology
   c) Histology
   d) Ecology
9. Which component in the following diagram serves as the site of sperm development?



a) 4 b) 3 c) 2 d) 1

10. Energy produced by 1kg of nuclear fuel is equivalent to _____ kg of coal.

a) 1 million b) 1 thousand c) 3 million d) 3 thousand

11. Flame cells are the excretory organs of:

a) Flatworms b) Earthworm c) Human d) Birds

12. _____ is released to maintain pregnancy for nine months in human female.

a) Prolactin b) Progesterone c) Thyroxine d) Oxytocin

13. Increase in concentration of _____ leads to depletion of ozone.

a) SO_2 b) NO_2 c) CFCs d) CO_2

14. Syphilis is a _____ sexual disease:

a) Bacterial b) Viral c) Parasitic d) Genetic

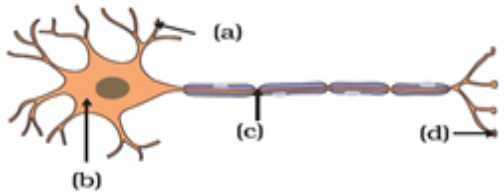
15. Genetic origin of a cell can be identified by:

a) Paul's limit b) No. of chromosomes c) DNA mutations d) Hayflick's limit

16. Fertilization occurs at _____ in female reproductive system.

a) Fimbiae b) Uterus c) Ovaries d) Serine

17. Identify component (c) in the following diagram:



a) Node of ranveir b) Soma c) Axon terminals d) Dendrite

18. CFTR gene is affected in which of the following disorder?

a) Huntington's disease b) Hexadactyly c) Dextrocardia d) Cystic fibrosis

ZIAUDDIN UNIVERSITY
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MODEL PAPER 2023

SUBJECT: ZOOLOGY	GRADE: XII	MAX. MARKS: 45	TIME: 2 HOURS

Time: 2 ½ hrs. **Marks: 36**

SECTION 'B' CONSTRUCTED RESPONSE QUESTIONS (CRQ'S) (9x2=18)

Note: Answer any FIVE (05) questions from Reasoning questions and any FOUR (04) questions from non-reasoning questions. All questions carry equal marks.

Q2.a) REASONING QUESTIONS:

i. How is SCID different from AIDS?
ii. Why blood pressure is high in glomerulus during kidney filtration process?
iii. How is Acid rain caused? **OR** how is brain developed in a human body?
iv. Cardiac muscles are unique in their action. How?
v. Why do viviparous eggs possess less amount of yolk? **OR** Why Archaeopteryx is considered as an evolutionary link between birds and reptiles?
vi. How do terrestrial organisms perform osmoregulation?
vii. How does cytoplasm play a vital role in the process of development?

Q2.b) NON-REASONING QUESTIONS:

viii. Give a brief account of Locomotion in Starfish **OR** Test tube babies.
ix. Differentiate between: **(Any One)**
    a. Renewable and Non-renewable energy resources
    b. Sympathetic and Parasympathetic nervous system
x. Write a note on thyroid gland disorders **OR** DNA fingerprinting
xi. Explain Appendicular skeleton **OR** Artificial selection.
xii. Illustrate Synapse **OR** Oogenesis.
xiii. Define Gerontology. Also give the symptoms of Aging.
xiv. Label the following diagram:

SECTION 'C' EXTENDED RESPONSE QUESTIONS (ERQ'S) (9x2=18)

Note: Answer any TWO (02) questions from this section. All questions carry equal marks.

Q3. Describe the structure of nephron and regulatory functions of kidney (with diagram).

Q4. Elaborate Menstrual cycle (with diagram).

OR

Explain the process of development in chick embryo in detail (with diagram).

Q5. Discuss Darwin's theory of organic evolution. Notify the objections made on this theory.

HSC PART II EXAMINATION
MARKS BREAKUP GRID FOR EXAMINATION 2023

GROUP: PRE-MEDICAL-II

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	100	-	100
PAKISTAN STUDIES	50	-	50
PHYSICS	85	15	100
CHEMISTRY	85	15	100
BOTANY	45	7	52
ZOOLOGY	40	8	48
TOTAL	505	45	550

GROUP: PRE-ENGINEERING-II

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	100	-	100
PAKISTAN STUDIES	50	-	50
PHYSICS	85	15	100
CHEMISTRY	85	15	100
MATHEMATICS	100	--	100
TOTAL	520	30	550

GROUP: COMPUTER SCIENCE/ GENERAL SCIENCE

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	100	-	100
PAKISTAN STUDIES	50	-	50
PHYSICS	85	15	100
COMPUTER SCIENCE	75	25	100
MATHEMATICS	100	--	100
TOTAL	510	40	550

GROUP: COMMERCE-II (Private/Regular)

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	100	-	100
PAKISTAN STUDIES	50	-	50
BANKING	75	-	75
COMMERCIAL GEOGRAPHY	75	-	75
ACCOUNTING	100	--	100
STATISTICS	50		50
TOTAL	550	---	550

GROUP: HUMANITIES-II (Private/Regular)

(Any Three Elective)

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	100	-	100
PAKISTAN STUDIES	50	-	50
COMPUTER STUDIES	75	25	100
CIVICS	100		100
MATHEMATICS	100	-	100
SOCIOLOGY	100	--	100
ECONOMICS	100		100
EDUCATION	100		100
TOTAL	550	---	550