



**ZIAUDDIN UNIVERSITY**  
EXAMINATION BOARD

**RESOURCES FOR  
“HSC-II BOTANY”**

**ZUEB EXAMINATIONS 2021**



**PREFACE:**

The ZUEB examination board acknowledges the serious problems encountered by the schools and colleges in smooth execution of the teaching and learning processes due to sudden and prolonged school closures during the covid-19 spread. The board also recognizes the health, psychological and financial issues encountered by students due to the spread of covid-19.

Considering all these problems and issues the ZUEB Board has developed these resources based on the condensed syllabus 2021 to facilitate students in learning the content through quality resource materials.

The schools and students could download these materials from [www.zueb.pk](http://www.zueb.pk) to prepare their students for the high quality and standardized ZUEB examinations 2021.

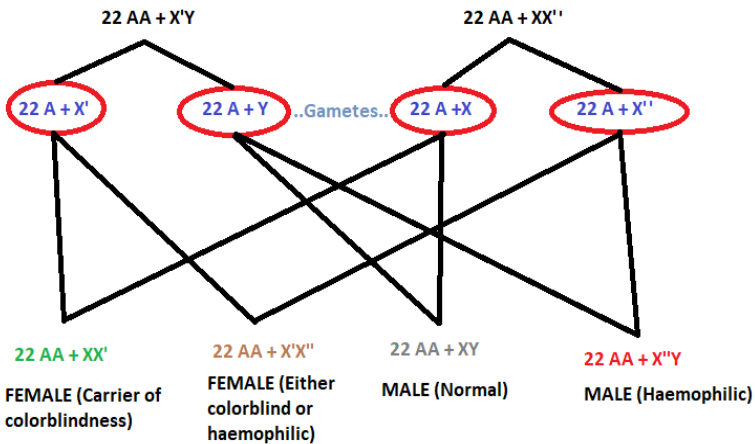
The materials consist of examination syllabus with specific students learning outcomes per topic, Multiple Choice Questions (MCQs) to assess different thinking levels, Constructed Response Questions (CRQs) with possible answers, Extended Response Questions (ERQs) with possible answers and learning materials.

**ACADEMIC UNIT ZUEB:**



5.	What is an autosome? How many Autosomes are there in a human cell	An <b>autosome</b> is any of the numbered chromosomes, as opposed to the sex chromosomes. Humans have 22 pairs of <b>autosomes</b> and one pair of sex chromosomes (the X and Y).		
6.	Which cross helpsto determine the homozygosity of a dominant parent?	<b>Test cross helps to determine.</b>		
7.	How is Apoptosis different from Necrosis?	The main difference between apoptosis and necrosis is that apoptosis is a predefined cell suicide, where the cell actively destroys itself, maintaining a smooth functioning in the body whereas necrosis is an accidental cell death occurring due to the uncontrolled external factors in the external environment of the cell		
8.	Differentiate between Heartwood and Sapwood.	The outer region of secondary wood is of lighter color and take part in the conduction of water from root to leaf are called Sap Wood.  The inner region of secondary wood is dark brown in color and do not take part in the conduction of water are called Heart Wood.		
9.	What are plant hormones. Write function of auxin.	<b>ROLE OF AUXIN:</b>  i. Cell division and cell enlargement It stimulate teh cell division and cell enlargement and plant in increase the length of plant.  ii. Initiation of Root Auxins also initiates development of adventitious roots when applied at the cut base of stem.  iii. Abscission		
10.	Define parthenocarp and apomixis	<b>PARTHENOCARPY</b> the development of a fruit without prior fertilization. <b>APOMIXIS</b> The process of development of diploid embryos without fertilization.” Or. “ <b>Apomixis</b> is a form of asexual reproduction that occurs via seeds, in which embryos develop without fertilization.		
11.	State Mendel’s law of segregation	<b>2ND LAW OF INHERITANCE OR LAW OF SEGREGATION OR LAW OF PURITY OF GAMETES:</b>  It states that, The characteristics of an organism are determined by internal factor which occurs in pairs, only one of a pair of such factor can be represented in a single gamete that separates at the time of gametogenesis		

12.	What will be the result of a cross between Haemophilia-male and Normal-female?	When a <b>haemophilic man</b> (XhY) marries a <b>normal woman</b> (XX), carrier girls (XXh) and <b>normal boys</b> (XY) are produced		
13.	How many types of decomposer exist in an ecosystem? Name them	<b>DECOMPOSERS:</b>  Two types of decomposers are present in an ecosystem  Saprotrophic fungi and bacteria are decomposers		
14.	Name only the biotic factors of an ecosystem.	1) <b>Producers</b> 2) <b>Consumers</b> 3) <b>Decomposers</b>		
15.	Name the pyrimidine bases in DNA structure	Pyrimidine is of three types; <b>cytosine, thymine</b> and uracil.		
16.	Define: Sex chromosomes	The chromosomes which are different in both male and female i.e. carry genetic information for sexual characters show by individual are called sex <b>chromosomes</b> .		
17.	Name the types of RNA involved in protein biosynthesis	The three main <b>types of RNA</b> directly involved in <b>protein synthesis</b> are messenger <b>RNA (mRNA)</b> ribosomal <b>RNA (rRNA)</b> , and transfer <b>RNA (tRNA)</b> .		
18.	What happens when a cell is placed in a hypotonic solution?	Lower solute concentration (more water) than the cytoplasm of a cell; causes cell to gain water by osmosis.		
19.	Write number of chromosomes in Pea ( <i>Pisum sativum</i> ) and Sugarcane ( <i>Saccharum officinarum</i> )?	<b>Pea : 14 chromosomes</b> <b>Sugar cane : 80 chromosomes</b>		
20.	Define meristematic tissues and name its types.	Meristematic tissues, or simply <b>meristems</b> , are tissues in which the cells remain forever young and divide actively throughout the life of the plant. A plant has four kinds of meristems: the <b>apical meristem</b> and three kinds of lateral— <b>vascular cambium, cork cambium, and intercalary meristem</b> .		
21.	How young stem gives mechanical support to plant body	The <b>young stem</b> present in the <b>plants gets mechanical support</b> from the cells found inside it. The sclerenchyma and collenchyma are the tissues present on it are responsible for the <b>support to the plant body</b>		

<p>22.</p> <p>What is the result of a color blind male and carrier female cross. with the help of checker board.</p>	<p>We can see out of the 2 daughters, one is carrier of colorblindness and one can be either haemophilic or colorblind, depending on genomic imprinting (which <math>X</math> will take the dominant role).</p> <p>But out of the 2 sons, one is normal and the other is haemophilic.</p>  <p>22 AA + X'Y                      22 AA + XX''</p> <p>22 A + X'      22 A + Y ..Gametes..      22 A + X      22 A + X''</p> <p>22 AA + XX'      22 AA + X'X''      22 AA + XY      22 AA + X''Y</p> <p>FEMALE (Carrier of colorblindness)      FEMALE (Either colorblind or haemophilic)      MALE (Normal)      MALE (Haemophilic)</p>		
<p>23.</p> <p>Describe the changes occurs in Prophase of Mitosis.</p>	<p>In start of prophase, thin chromatin network breakdown into fine threads called chromosomes.</p> <ul style="list-style-type: none"> <li>➤ Fine <b>chromosomes</b>, gradually with progression of prophase, shorten because of condensation and each chromosome appear to consist of two threads i.e. chromatids. Two chromatids are found link with each other at point called centromere through protein called <b>kinetochore</b>.</li> <li>➤ As prophase proceed, one of two pairs of centrioles present adjacent to nucleus start migrating away from other to reach opposite pole.</li> <li>➤ As <b>centriole pair migrate, spindle fibers are produce</b> in b/w two pairs because of <b>polymerization of protein tubulin</b> (or micro-tubules) in between these. <b>Orientation of centrioles decide plane of cell-division</b>.</li> <li>➤ Chromatids become attach to these spindle fibers at position of their centromere by kinetochore protein. Whole assembly i.e. spindle fibers and attached chromatids, is called <b>mitotic apparatus</b>.</li> <li>➤ Spindle fibers produce are of three types continuous spindle fibers which are from centriole to centriole, <b>discontinuous spindle fibers</b> which are attach to chromatids at centromere and astral fibers present at poles.</li> <li>➤ In plants and some insects, centrioles are absent. In these cells, spindle fiber are formed directly through polymerization of protein tubulin.</li> <li>➤ At end of prophase, <b>nuclear membrane and nucleolus disappear</b>.</li> </ul>		

24.	<b>Name only the abiotic components of an ecosystem.</b>	Examples of <b>abiotic factors</b> are water, air, soil, sunlight, and minerals		
25.	<b>How is Photonasty different from Phototropism?</b>	<p>Phototropism is directional movement while photonasty is non-directional movement.</p> <p>Phototropism is irreversible while photonasty is reversible.</p> <p>Phototropism is associated with growth while photonasty is not associated with growth.</p> <p>Phototropism is caused by cell divisions while photonasty is caused by changes in turgor.</p> <p>Phototropism is slow action while photonasty is fast.</p>		
26.	<b>Define Nastic movement.</b>	<b>Nastic movements</b> are non-directional responses to stimuli (e.g. temperature, humidity, light irradiance), and are usually associated with plants. The <b>movement</b> can be due to changes in turgor or changes in growth.		