

**XI –BIO - ZOOLOGY - PUBLIC EXAM ANSWER KEY - 2020**

Blue print – mp20 – bio - zoology

	Chapter name	1m	2m	3m	5m	total
1	The Living World	1	1			3
2	Kngdom Animalia	1		1 BB		4
3	Tissue Level Of Organization				1 BB	5
4	Organ And Organ Sysytems In Animalia	1	1			3
5	Digestion And Absorption		1	1		5
6	Respiration	1 BB		1 BB		4
7	Body Fluids And Circulation		1	1		5
8	Excretion	1			1	6
9	Locomotion And Movement				1	5
10	Neural Control And Co-Ordination	1	1 BB			3
11	Chemical Co Ordination And Integration	1		1 BB		4
12	Trends In Economic Zoology	1	1		1	8
	<b>Total</b>	<b>8</b>	<b>12</b>	<b>15</b>	<b>20</b>	<b>55</b>

**BB- BOOK BACK BI – BOOK INTERIOR BB-P – PART OF BOOKBOOK**

**Percentage - Result**

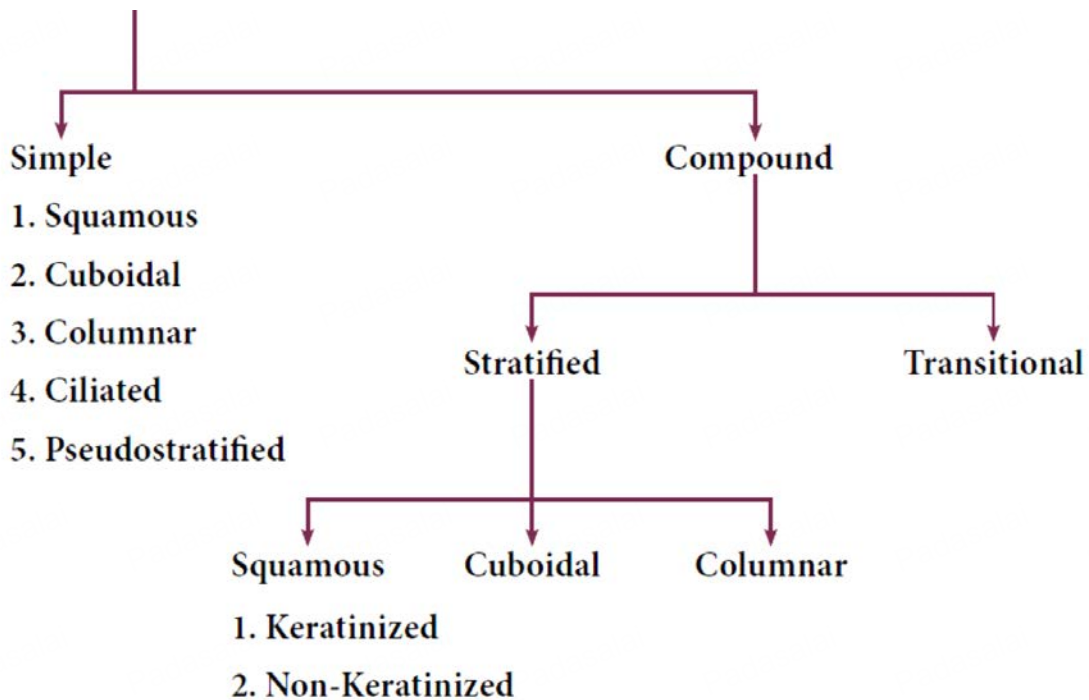
<b>Book back</b>	17	30 %
<b>Book interior</b>	38	60 %
<b>Total</b>	55	100%

**XII –Bio - ZOOLOGY - answer key 2020**  
[ENGLISH VERSION]

		Type A			TYPE - B
I	Choose the best answer			8 x1=8	
1	a	(1)- (iii) (2)- (i) (3)- (ii) (4)- (iv)	1	b	All the above statements are true
2	c	Cornea-- >Conjunctiva---- > Aqueous Humor -->Lens---> Retina	2	a	(1)- (iii) (2)- (i) (3)- (ii) (4)- (iv)
3	a	Flame cells - Earthworm	3	d	Zoological parks – wild animals are kept in natural environment without human care
4	b	Both statements (A) and (R) are correct and (R) is the correct explanation to (A)	4	a	2
5	a	2	5	c	Cornea-- >Conjunctiva---- > Aqueous Humor -->Lens---> Retina
6	b	Carbonic acid	6	a	Flame cells - Earthworm
7	d	Zoological parks – wild animals are kept in natural environment without human care	7	b	Both statements (A) and (R) are correct and (R) is the correct explanation to (A)
8	b	All the above statements are true	8	b	Carbonic acid
II	Answer the following			4 x 2= 8	
9	<b>Carolus Linnaeus is the father of modern taxonomy</b> 1. The system of classifying and naming organisms. 2. The development of a hierarchical system of classification of nature 3. He developed a scientific system of taxonomy and binomial nomenclature				2
10	<b>Earthworm - ecological strategies with example</b> 1. Epigeics (Greek for “up on the earth”) are surface dwellers, eg. Perionyx excavatus and Eudrilus eugeniae. 2. Anecics (Greek for “out of the earth”) are found in upper layers of the soil, eg. Lampito mauritii, Lumbricus terrestris. 3. Endogeics (Greek for “within the earth”) are found in deeper layers of the soil eg. Octochaetona thurstoni.				2
11	<b>Absorption take place</b> 1. Absorption of simple sugars, alcohol and medicines takes place in the <b>stomach</b> . 2. Certain drugs are absorbed by <b>blood capillaries</b> in the lower side of the tongue and mucosa of mouth. 3. <b>Large intestine</b> is also involved in absorption of more amounts of water vitamins, some minerals and certain drugs.				1 1
12	<b>Stroke volume and relation of cardiac output</b> 1. Stroke volume (SV) is the volume of blood pumped out by one ventricle with each beat. SV depends on ventricular contraction. CO = HR X SV. 2. SV represents the difference between EDV (amount of blood that collects in a ventricle during diastole) and ESV (volume of blood remaining in the ventricle				2

	after contraction). $SV = EDV - ESV$						
13	<b>Blind Spot</b> : The optic nerves and the retinal blood vessels enter the eye slightly below the posterior pole, which is devoid of photo receptors; hence this region		2				
14	<table border="1"> <thead> <tr> <th><i>Nuptial Flight</i></th> <th><b>Swarming</b></th> </tr> </thead> <tbody> <tr> <td>The breeding season in winter, a unique flight takes place by the queen bee followed by several drones</td> <td>The process of leaving the colony by the queen with a large group of worker bees to form a new colony</td> </tr> </tbody> </table>		<i>Nuptial Flight</i>	<b>Swarming</b>	The breeding season in winter, a unique flight takes place by the queen bee followed by several drones	The process of leaving the colony by the queen with a large group of worker bees to form a new colony	2
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The breeding season in winter, a unique flight takes place by the queen bee followed by several drones	The process of leaving the colony by the queen with a large group of worker bees to form a new colony						
III	Answer the following		3 x3 = 9				
15	<table border="1"> <thead> <tr> <th><b>Schizocoelomates animals</b></th> <th><b>Enterocoelomate animals</b></th> </tr> </thead> <tbody> <tr> <td>These animals the body cavity is formed by splitting of mesoderm. (e.g., annelids, arthropods, molluscs)</td> <td>The body cavity is formed from the mesodermal pouches of archenteron. (e.g., Echinoderms, hemichordates and chordates)</td> </tr> </tbody> </table>		<b>Schizocoelomates animals</b>	<b>Enterocoelomate animals</b>	These animals the body cavity is formed by splitting of mesoderm. (e.g., annelids, arthropods, molluscs)	The body cavity is formed from the mesodermal pouches of archenteron. (e.g., Echinoderms, hemichordates and chordates)	3
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16	<b>BMI</b> <ol style="list-style-type: none"> <li>BMI is calculated as body weight in Kg, divided by the square of body height in meters. For example, a 80 Kg person with a height of 180 cms would have a BMI of <math>BMI = 24.7 \text{ kg/m}^2</math> (Normal)</li> <li>A normal BMI range for adult is 19- 25; above 25 is considered as obese</li> </ol>		3				
17	<b>Changes of person s body lives in low partial oxygen pressure</b> The atmospheric pressure and partial pressure of oxygen are lowered, the individual responds with symptoms of acute mountain sickness (AMS)–headache, shortness of breath, nausea and dizziness due to poor binding of O <sub>2</sub> with haemoglobin		3				
18	<b>Person suffering from fever is advised to take blood test.</b> The WBC count will increase. Since during certain types of parasitic infections, allergic reaction and inflammatory reactions the WBC count will increase.		3				
19	<b>Gland that functions as a circadian rhythm in our body (Compulsory)</b> <b>Gland</b> : In human, the pineal gland or epiphysis cerebri or conarium <b>Location</b> : its located behind the third ventricle of brain and is formed of parenchymal cells and interstitial cells. <b>Secretion</b> : It secretes the hormone, <b>melatonin</b> , which plays a central role in the regulation. of circadian rhythm of our body and maintains the normal sleep wake cycle.		3				
IV	Answer the following		2 x 5=10				
20	a	<b>Epithelia</b> Epithelial tissue is a sheet of cells that covers the body surface or lines the body cavity. <b>Characteristic features of different epithelia</b>	2				

**Epithelia**



1

1

1

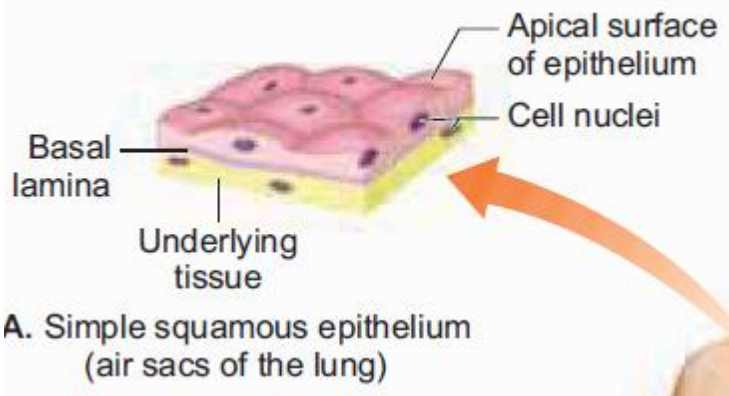
the epithelial tissues are classified into  
Simple epithelium  
Compound epithelium or Stratified epithelium.

**Simple epithelium divided in to**

- 1. Squamous**
- 2. Cuboidal**
- 3. Columnar**
- 4. Ciliated**
- 5. Pseudostratified**

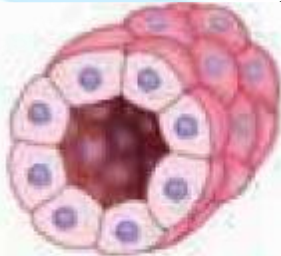
**1. Squamous**

The **squamous epithelium** is made of a single thin layer of flattened cells with irregular boundaries. They are found in the kidney glomeruli, air sacs of lungs, lining of heart, blood vessels and lymphatic vessels and are involved in functions like forming a diffusion boundary and filtration in sites where protection is not important.



## 2. Cuboidal

The **cuboidal epithelium** is made of a single layer of cube like cells. This tissue is commonly found in the kidney tubules, ducts and secretory portions of small glands and surface of the ovary. Its main functions are secretion and absorption.



**B. Simple cuboidal epithelium**  
(kidney)

## 3. Columnar

The **columnar epithelium** is composed of single layer of tall cells with round to oval nuclei at the base. It lines the digestive tract from the stomach to rectum. The two modifications of this lining are the presence of **microvilli** on the apical surface of the absorptive cells and **Goblet cell** which secretes the protective lubricating mucus. The functions of this epithelium include absorption, secretion of mucus, enzymes and other substances.



**C. Simple columnar epithelium**  
(intestine)

## 4. Ciliated

If the columnar cells bear cilia on their free surfaces they are called ciliated epithelium.

This **ciliated type** propels mucus by ciliary actions and it lines the small bronchioles, fallopian tubes and uterus. **Nonciliated type** lines most of the digestive tract, gall bladder and secretory ducts of glands.

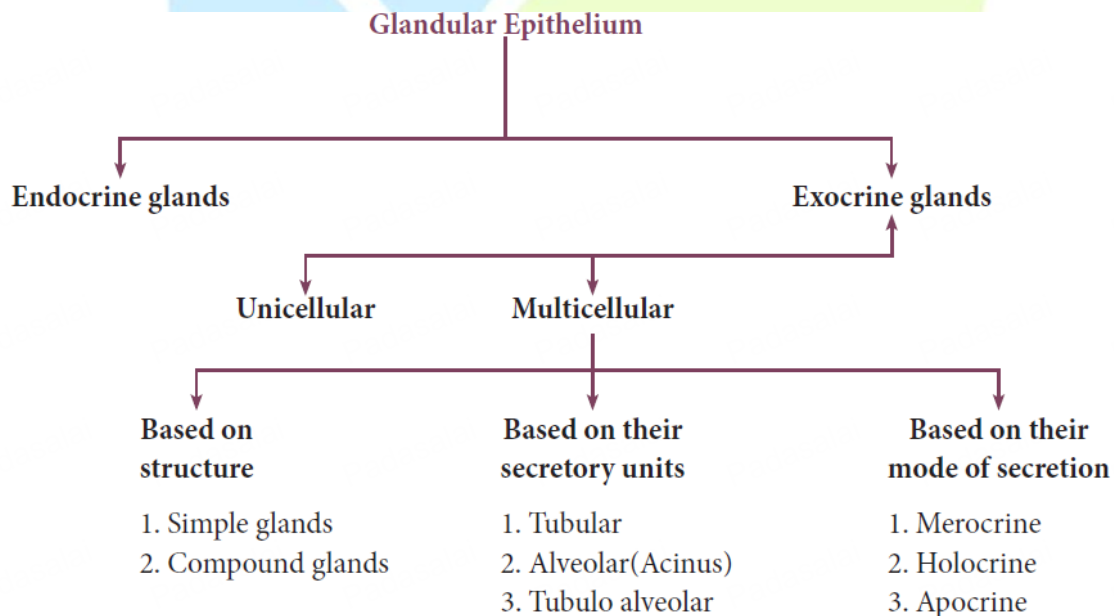
### 5. Pseudo-stratified epithelial

**These** cells are columnar, but unequal in size. Although the epithelium is single layered yet it appears to be multi-layered because the nuclei lie at different levels in different cells. Hence, it is also called pseudostratified epithelium and its functions are protection, secretion and absorption.



Pseudostratified ciliated columnar epithelium (respiratory tract)

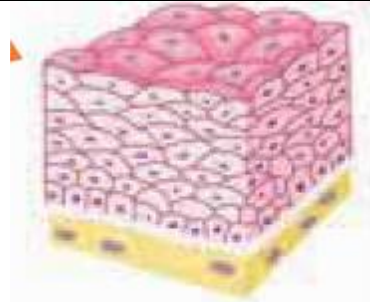
Some of the cuboidal or columnar cells get specialized for secretion and are called **glandular epithelium**. They are further divided into



### Compound epithelium

**They are** made of more than one layer (multi-layered) of cells and thus has a limited role in secretion and absorption. The compound epithelia may be stratified and transitional.

**Stratified squamous epithelium** is of two types called **keratinized type** which forms the dry epidermis of the skin and the **non keratinized type** forms the moist lining of the oesophagus, mouth, conjunctiva of the eyes and vagina.



**E. Stratified squamous epithelium (esophagus)**

**Stratified cuboidal epithelium** mostly found in the ducts of sweat glands and mammary glands.

**Stratified columnar epithelium** has limited distribution in the body, found around the lumen of the pharynx, male urethra and lining of some glandular ducts.

**Transitional Epithelium** is found lining the ureters, urinary bladder and part of the urethra. This epithelium allows stretching and is protective in function

**b Haemodialysis**

Malfunctioning of the kidneys can lead to accumulation of urea and other toxic substances, leading to kidney failure. In such patients toxic urea can be removed from the blood by a process called haemodialysis. A dialyzing machine or an artificial kidney is connected to the patient's body. A dialyzing machine consists of a long cellulose tube surrounded by the dialysing fluid in a water bath. The patient's blood is drawn from a convenient artery and pumped into the dialysing unit after adding an anticoagulant like heparin. The tiny pores in the dialysis tube allows

- I. small molecules such as glucose, salts an

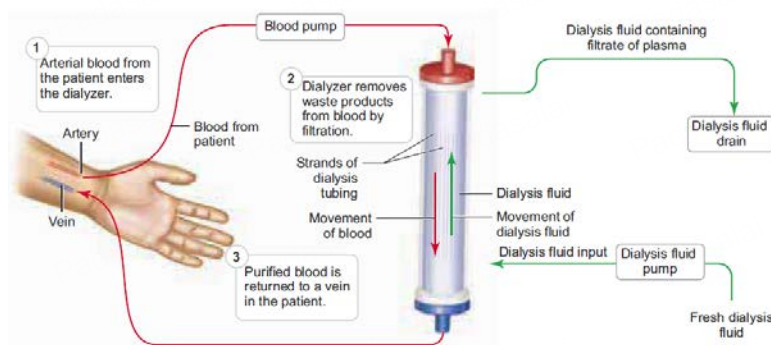


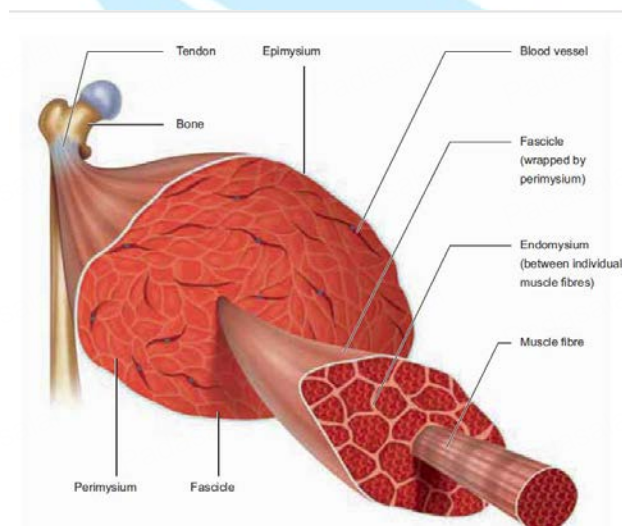
Figure 8.12 Simplified diagram of hemodialysis

**21 a Sarcomere is structural and function unit**

Each muscle fibre is thin and elongated. Most of them taper at one or both ends. Muscle fibre has multiple oval nuclei just beneath its **plasma membrane** or **sarcolemma**. The cytoplasm of the muscle fibre is called the **sarcoplasm**. It contains glycosomes, myoglobin and sarcoplasmic reticulum. **Myoglobin** is a red- coloured

respiratory pigment of the muscle fibre. It is similar to haemoglobin and contains iron group that has affinity towards oxygen and serves as the reservoir of oxygen. **Glycosomes** are the granules of stored glycogen that provide glucose during the period of muscle fibre activity. Actin and myosin are muscle proteins present in the muscle fibre. Along the length of each myofibril there are a repeated series of dark and light bands (Figure 9.2). The dark **A-bands** (Anisotropic bands) and the light **I-bands** (Isotropic bands) are perfectly aligned with one another. This type of arrangement gives the cell a striated appearance. Each dark band has a lighter region in its middle called the **H-Zone** (H-helles, meaning clear). Each H-zone is bisected vertically by a dark line called the M-line (M-for middle). The light I-bands also have a darker mid line area called the **Z-disc** (from the German "Zwischenscheibe" the disc inbetween the I-bands). The yofibrils contain the contractile element, the **sarcomere** which is the functional unit of the skeletal muscle. A Sarcomere is the region of a myofibril between two successive Z-discs. It contains an A-band with a half I-band at each end. Inside the sarcomere two types of filaments are present namely the **thick** and **thin filaments**. The thick filaments extend the entire length of the A-band, the thin filaments extend across the I-band and partly into the A-band. The invagination of the sarcolemma forms transverse tubules (**T-tubules**) and they penetrate into the junction between the A and I-bands.

1



2

b

Artificial insemination is a technique in which the semen collected from the male is injected to the reproductive tract of the selected female. Artificial insemination is an economical measure where fewer bulls are required and maximum use can be made of the best sire.

**Advantages of artificial insemination i.**

1. It increases the rate of conception.
2. It avoids genital diseases.
3. Semen can be collected from injured bulls which have desirable traits.
4. Superior animals located apart can be bred successfully.

**Multiple ovulation embryo transfer technology (MOET)**

5



It is another method of propagation of animals with desirable traits. This method is applied when the success rate of crossing is low even after artificial insemination. In this method Follicle stimulating hormone (FSH) is administered to cows for inducing follicular maturation and super ovulation. Instead of one egg per cycle, 6-8 eggs can be produced by this technology. The eggs are carefully recovered non-surgically from the genetic mother and fertilized artificially. The embryos at 8-32 celled stages are recovered and transferred to a surrogate mother. For another round of ovulation, the same genetic mother is utilized. This technology can be applied to cattle, sheep and buffaloes. Advantage of this technology is to produce high milk yielding females and high-quality meat yielding bulls in a short time.

**XI –BIO - BOTANY - PUBLIC EXAM ANSWER KEY - 2020**

**Blue print – mp20 – Bio - Botany**

	Chapter name	1m	2m	3m	5m	total
1	Living World		1 BB		1 BB	7
2	Plant Kingdom	1 BB	1 BB			3
3	Vegetative Morphology	1 BI				1
4	Reproductive Morphology	1 BB		1 BI		4
5	Taxonomy and Systematic Botany		1 BB			2
6	Cell: The Unit of Life	1 BI		1 BB		4
7	Cell Cycle	1 BB			1 BB	6
8	Biomolecules			1 BB		3
9	Tissue and Tissue System	2 BB				2
10	Secondary Growth			1 BB		3
11	Transport in Plants		1 BB			2
12	Mineral Nutrition	1 BB			1 BB	6
13	Photosynthesis			1 BB		3
14	Respiration		1 BB			2
15	Plant Growth and Development		1 BB		1 BB	7

<b>Total</b>	<b>8</b>	<b>12</b>	<b>15</b>	<b>20</b>	<b>55</b>
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**BB- BOOK BACK BI – BOOK INTERIOR BB-P – PART OF BOOKBOOK**

**Percentage - Result**

<b>Book back</b>	<b>50</b>	<b>91 %</b>
<b>Book interior</b>	<b>5</b>	<b>9 %</b>
<b>Total</b>	<b>55</b>	<b>100%</b>

**XI –BIO - BOTANY - PUBLIC EXAM ANSWER KEY - 2020**  
**[ENGLISH VERSION]**

	Type A			TYPE - B	
<b>I</b>	<b>Choose the best answer</b>				<b>8 x1=8</b>
	b	Citrus	1	d	Calcium
2	d	G1-S-G2-M	2	a	(i),(ii) and (iv) only
3	a	(i),(ii) and (iv) only	3	b	Citrus
4	c	Bryophytes	4	a	Syncarpous
5	c	Corti	5	c	Bryophytes
6	d	Calcium	6	d	(i) and (iii) only
7	d	(i) and (iii) only	7	c	Corti
8	a	Syncarpous	8	d	G1-S-G2-M
<b>II</b>	<b>ANSWER ANY FOUR QUESTIONS. Question No. 14 is compulsory.</b>				<b>4 x 2= 8</b>
9	<p><b>Floral characteristics of Clitoria ternatea: (any 2 point)</b>  <b>Calyx:</b> Sepals 5, synsepalous, green showing valvate aestivation. Odd sepal is anterior in position.  <b>Corolla:</b> Petals 5, white or blue apopetalous, irregular papilionaceous corolla showing, descendingly imbricate aestivation.  <b>Androecium:</b> Stamens 10, diadelphous (9)+1 nine stamens fused to form a bundle and the tenth stamen is free. Anthers are ditheous, basifixed, introse and dechiscing by longitudinal slits.  <b>Gynoecium:</b> Monocarpellary, unilocular, with many ovules on mariginal placentation, ovary superior, style simple and incurved with feathery stigma.</p>				2
10	<p><b>parameters which control water potential</b></p> <ul style="list-style-type: none"> <li>Solute concentration or Solute potential (<math>\Psi_S</math>)</li> <li>Pressure potential (<math>\Psi_P</math>)</li> </ul>				2

11	<p><b>Plasticity:</b></p> <ul style="list-style-type: none"> <li>Plants follow different pathways in response to environment or phases of life to form different kinds of structures. This ability is called <b>plasticity</b>. Example: Heterophyly in cotton and coriander.</li> </ul>	1	1
12	<p><b>What are enzymes involved in phosphorylation and dephosphorylation reactions in EMP pathway?</b></p> <p><b>phosphorylation :</b></p> <ul style="list-style-type: none"> <li>Hexokinase,</li> <li>Phosphofructo kinase ,</li> <li>Glyceraldehyde-3-Phosphate dehydrogenase,</li> </ul> <p><b>dephosphorylation :</b></p> <ul style="list-style-type: none"> <li>Phosphoglycerate kinase,</li> <li>Pyruvate kinase</li> </ul>	2	
13	<p><b>lichens :</b></p> <ul style="list-style-type: none"> <li>The symbiotic association between algae and fungi is called <b>lichens</b>. The algal partner is called <b>Phycobiont</b> or <b>Photobiont</b> and the fungal partner is called <b>Mycobiont</b>.</li> </ul>	2	
14	<p><b>Plectostele:</b></p> <ul style="list-style-type: none"> <li>Xylem plates alternates with phloem plates. Example: <i>Lycopodium clavatum</i>.</li> </ul>	2	
III	<b>ANSWER ANY THREE QUESTION. Question No. 19 is compulsory</b>	3 x3 = 9	
15	<p><b>Draw the floral diagram and floral formula of Hibiscus rosasinensis</b></p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <math display="block">\text{Br Brl } \oplus \text{ } \ominus \text{ } \text{K}_{(5)} \text{C}_5 \text{A}_{(\infty)} \underline{\text{G}}_{(5)}</math> </div>	2	1
16	<p><b>A transverse section of the trunk of a tree shows concentric rings which are known as growth rings. How are these rings formed? What are the significance of these rings?</b></p> <ul style="list-style-type: none"> <li>The spring wood is lighter in colour and has a lower density whereas the autumn wood is darker and has a higher density.</li> <li>The annual ring denotes the combination of early wood and late wood and the ring becomes evident to our eye due to the high density of late wood. Sometimes annual rings are called growth rings but it should be remembered all the growth rings are</li> </ul>	3	

	<p>not annual. In some trees more than one growth ring is formed with in a year due to climatic changes.</p> <ul style="list-style-type: none"> <li>Each annual ring corresponds to one year's growth and on the basis of these rings, the age of a particular plant can easily be calculated. The determination of the age of a tree by counting the annual rings is called dendrochronology.</li> </ul>																			
17	<p><b>Characteristic features of DNA:</b></p> <ul style="list-style-type: none"> <li>If one strand runs in the 5'-3' direction, the other runs in 3'-5' direction and thus are antiparallel (they run in opposite direction). The 5' end has the phosphate group and 3' end has the OH group.</li> <li>The angle at which the two sugars protrude from the base pairs is about 120°, for the narrow angle and 240° for the wide angle. The narrow angle between the sugars generates a minor groove and the large angle on the other edge generates major groove.</li> <li>Each base is 0.34 nm apart and a complete turn of the helix comprises 3.4 nm or 10 base pairs per turn in the predominant B form of DNA.</li> <li>DNA helical structure has a diameter of 20 Å and a pitch of about 34 Å. X-ray crystal study of DNA takes a stack of about 10 bp to go completely around the helix (360°).</li> <li>Thermodynamic stability of the helix and specificity of base pairing includes (i) the hydrogen bonds between the complementary bases of the double helix (ii) stacking interaction between bases tend to stack about each other perpendicular to the direction of helical axis. Electron cloud interactions (π – π) between the bases in the helical stacks contribute to the stability of the double helix.</li> </ul>	3																		
18	<p><b>Write the difference between Plant cell and Animal cell: (ANY 5 POINT)</b></p> <table border="1" data-bbox="127 1187 1340 2004"> <thead> <tr> <th data-bbox="127 1187 782 1265">Plant cell</th> <th data-bbox="782 1187 1340 1265">Animal Cell</th> </tr> </thead> <tbody> <tr> <td data-bbox="127 1265 782 1355">Usually they are larger than animal cells</td> <td data-bbox="782 1265 1340 1355">Usually smaller than plant cells</td> </tr> <tr> <td data-bbox="127 1355 782 1444">Cell wall present</td> <td data-bbox="782 1355 1340 1444">Cell wall absent</td> </tr> <tr> <td data-bbox="127 1444 782 1534">Plasmodesmata present</td> <td data-bbox="782 1444 1340 1534">Plasmodesmata absent</td> </tr> <tr> <td data-bbox="127 1534 782 1624">Chloroplast present</td> <td data-bbox="782 1534 1340 1624">Chloroplast absent</td> </tr> <tr> <td data-bbox="127 1624 782 1713">Vacuole large and permanent</td> <td data-bbox="782 1624 1340 1713">Vacuole small and temporary</td> </tr> <tr> <td data-bbox="127 1713 782 1803">Tonoplast present around vacuole</td> <td data-bbox="782 1713 1340 1803">Tonoplast absent</td> </tr> <tr> <td data-bbox="127 1803 782 1892">Centrioles absent except motile cells of lower plants</td> <td data-bbox="782 1803 1340 1892">Centrioles present</td> </tr> <tr> <td data-bbox="127 1892 782 2004">Nucleus present along the periphery of the cell</td> <td data-bbox="782 1892 1340 2004">Nucleus at the centre of the cell</td> </tr> </tbody> </table>	Plant cell	Animal Cell	Usually they are larger than animal cells	Usually smaller than plant cells	Cell wall present	Cell wall absent	Plasmodesmata present	Plasmodesmata absent	Chloroplast present	Chloroplast absent	Vacuole large and permanent	Vacuole small and temporary	Tonoplast present around vacuole	Tonoplast absent	Centrioles absent except motile cells of lower plants	Centrioles present	Nucleus present along the periphery of the cell	Nucleus at the centre of the cell	3
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Nucleus present along the periphery of the cell	Nucleus at the centre of the cell																			

		Lysosomes are rare	Lysosomes present													
		Storage material is starch grains	Storage material is a glycogen granules													
19	<b>Significance of photosynthesis: (ANY 3 POINT)</b> <ul style="list-style-type: none"> <li>• Photosynthetic organisms provide food for all living organisms on earth either directly or indirectly.</li> <li>• It is the only natural process that liberates oxygen in the atmosphere and balances the oxygen level.</li> <li>• Photosynthesis balances the oxygen and carbon cycle in nature.</li> <li>• Fuels such as coal, petroleum and other fossil fuels are from preserved photosynthetic plants.</li> <li>• Photosynthetic organisms are the primary producers on which all consumers depend for energy.</li> <li>• Plants provide fodder, fibre, fire wood, timber, useful medicinal products and these sources come by the act of photosynthesis.</li> </ul>			3												
IV	<b>Answer the following</b>			<b>2 x 5=10</b>												
20	a	<b>Write the distinguishing features of Monera:</b> <table border="1"> <tr> <td>Cell type</td> <td>Prokaryotic</td> </tr> <tr> <td>Level of organization</td> <td>Unicellular</td> </tr> <tr> <td>Cell wall</td> <td>Present (made up of Peptidoglycan and Mucopeptides)</td> </tr> <tr> <td>Nutrition</td> <td>Autotrophic (Phototrophic, Chemoautotrophic) Heterotrophic (parasitic and saprophytic)</td> </tr> <tr> <td>Motility</td> <td>Motile or non motile</td> </tr> <tr> <td>Organisms</td> <td>Archaeobacteria, Eubacteria, Cyanobacteria, Actinomycetes and Mycoplasma</td> </tr> </table>		Cell type	Prokaryotic	Level of organization	Unicellular	Cell wall	Present (made up of Peptidoglycan and Mucopeptides)	Nutrition	Autotrophic (Phototrophic, Chemoautotrophic) Heterotrophic (parasitic and saprophytic)	Motility	Motile or non motile	Organisms	Archaeobacteria, Eubacteria, Cyanobacteria, Actinomycetes and Mycoplasma	5
Cell type	Prokaryotic															
Level of organization	Unicellular															
Cell wall	Present (made up of Peptidoglycan and Mucopeptides)															
Nutrition	Autotrophic (Phototrophic, Chemoautotrophic) Heterotrophic (parasitic and saprophytic)															
Motility	Motile or non motile															
Organisms	Archaeobacteria, Eubacteria, Cyanobacteria, Actinomycetes and Mycoplasma															
	b	<b>Differentiate between mitosis and meiosis:</b> <table border="1"> <thead> <tr> <th>Mitosis</th> <th>Meiosis</th> </tr> </thead> <tbody> <tr> <td>One division</td> <td>Two divisions</td> </tr> <tr> <td>Number of chromosomes remains the same</td> <td>Number of chromosomes is halved</td> </tr> </tbody> </table>		Mitosis	Meiosis	One division	Two divisions	Number of chromosomes remains the same	Number of chromosomes is halved	5						
Mitosis	Meiosis															
One division	Two divisions															
Number of chromosomes remains the same	Number of chromosomes is halved															

		Homologous chromosomes line up separately on the metaphase plate	Homologous chromosomes line up in pairs at the metaphase plate	
		Homologous chromosomes do not pair up	Homologous chromosomes pair up to form bivalent	
		Chiasmata do not form and crossing over never occurs	Chiasmata form and crossing over occurs	
		Daughter cells are genetically identical	Daughter cells are genetically different from the parent cells	
		Two daughter cells are formed	Four daughter cells are formed	
21	a	<p><b>Explain the insectivorous mode of nutrition in angiosperm:</b></p> <p>Plants which are growing in nitrogen deficient areas develop insectivorous habit to resolve nitrogen deficiency.</p> <p>a. <i>Nepenthes</i> (Pitcher plant): Pitcher is a modified leaf and contains digestive enzymes. Rim of the pitcher is provided with nectar glands and acts as an attractive lid. When insect is trapped, proteolytic enzymes will digest the insect.</p> <p>b. <i>Drosera</i> (Sundew): It consists of long club shaped tentacles which secrete sticky digestive fluid which looks like a sundew.</p> <p>c. <i>Utricularia</i> (Bladder wort): Submerged plant in which leaf is modified into a bladder to collect insect in water.</p> <p>d. <i>Dionaea</i> (Venus fly trap): Leaf of this plant modified into a colourful trap. Two folds of lamina consist of sensitive trigger hairs and when insects touch the hairs it will close</p>		4
				1



*Nepenthes* (Pitcher)



*Drosera* (Sundew)



*Utricularia* (Bladderwort)



*Dionea* (Venus fly trap)

b **Physiological effects of Gibberellin**

- :It produces extraordinary elongation of stem caused by cell division and cell elongation.
- Rosette plants (genetic dwarfism) plants exhibit excessive intermodal growth when they are treated with gibberellins. This sudden elongation of stem followed by flowering is called **bolting**
- Gibberellin breaks dormancy in potato tubers.
- Many biennials usually flower during second year of their growth. For flowering to take place, these plants should be exposed to cold season. Such plants could be made to flower without exposure to cold season in the first year itself, when they are treated with gibberellins.

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