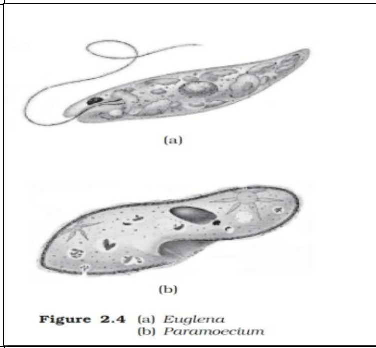
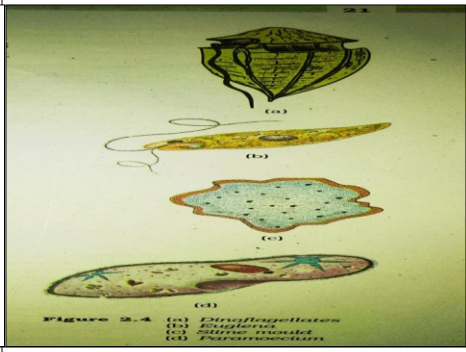
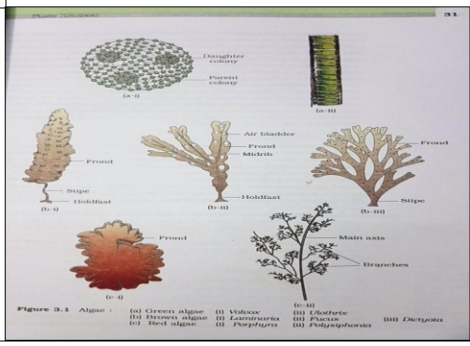
NCERT UPDATE XI

Sno.	Page No.	XI Topic	Old Content(to be updated)	Updated Content	Content added
1	17	2. BIOLOGICAL CLASSIFICATION	Fungal Cell wall : Present (without cellulose)	Fungal Cell wall : Present (without cellulose) **with Chitin**	
2	17	2. BIOLOGICAL CLASSIFICATION	It brought together the prokaryotic bacteria and the blue green algae with other groups which were eukaryotic.	It brought together the prokaryotic bacteria and the blue green algae **(Cyano bacteria)** with other groups which were eukaryotic.	
3	21	Biological Classification			**Diagram of Dinoflagellates and slime mould on page no 21**
4	22	2. BIOLOGICAL CLASSIFICATION	When your bread develops a mould or your orange rots it is because of fungi.	You must have seen fungi on a moist bread and rotten fruits.	
5	25	2. BIOLOGICAL CLASSIFICATION	2.6 VIRUSES, VIROIDS AND LICHENS	2.6 VIRUSES, VIROIDS, **PRIONS** AND LICHENS	
6	25	2. BIOLOGICAL CLASSIFICATION	In the five kingdom classification of Whittaker there is no mention of some acellular organisms like viruses and viroids, and lichens. These are briefly introduced here. All of us who have suffered the illeffects of common cold or 'flu' know what effects viruses can have on us, even if we do not associate it with our condition. Viruses did not find a place in classification since they are not truly 'living', if we understand living as those organisms that have a cell structure.	In the five kingdom classification of Whittaker there is no mention of Lichens and some acellular organisms like viruses, viroids, and **prions**. These are briefly introduced here. All of us who have suffered the ill effects of common cold or 'flu' know what effects viruses can have on us, even if we do not associate it with our condition. Viruses did not find a place in classification since they are not considered truly 'living', if we understand living as those organisms that have a cell structure.	
7	27	2. BIOLOGICAL CLASSIFICATION			**Prions : In modern medicine certain infections neurological diseases were found to be transmitted by an agent consisted of abnormally folded protein. The agent was similar in size to viruses. These agents were called prions. The most notable diseases caused by prions are bovine spongiform encephalopathy (BSE) commonly called mad cow disease in cattle and its analogous variant Cr-Jacob disease (CJD) in humans.**
8	30	3. PLANT KINGDOM	These gametes can be flagellated and similar in size (as in **Chlamydomonas**) or non-flagellated (non-motile) but similar in size (as in Spirogyra). Such reproduction is called isogamous. Fusion of two gametes dissimilar in size, as in some species of **Chlamydomonas** is termed as anisogamous.	These gametes can be flagellated and similar in size (as in **Ulothrix**) or non-flagellated (non-motile) but similar in size (as in Spirogyra). Such reproduction is called isogamous. Fusion of two gametes dissimilar in size, as in species of **Udorina** is termed as anisogamous.	
9	31	3. PLANT KINGDOM			**Diagram of Ulothrix Added**

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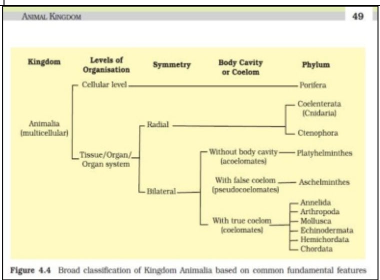
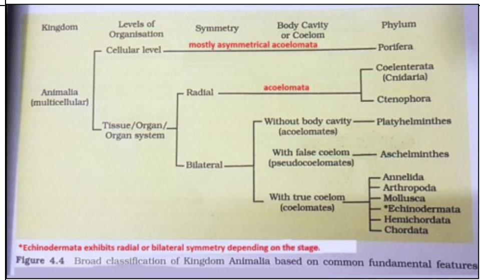
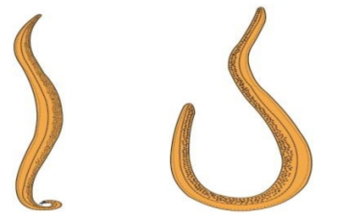
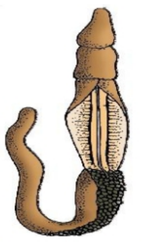
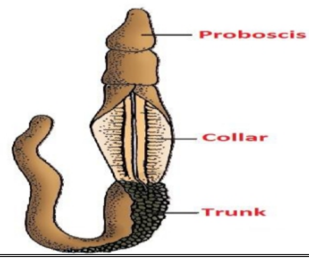
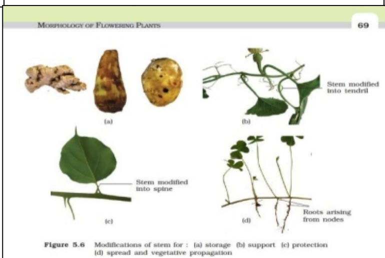
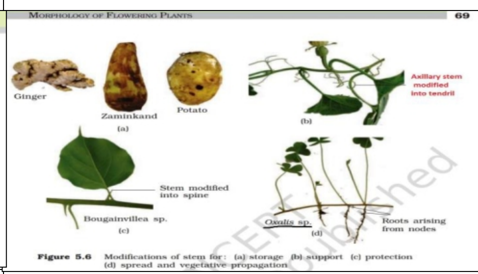
10	40	3. PLANT KINGDOM	The dicotyledons are characterised by having two cotyledons in their seeds while the monocolyledons have only one. The male sex organs in a flower is the stamen. Each stamen consists of a slender filament with an anther at the tip. The anthers, following meiosis, produce pollen grains. The female sex organs in a flower is the pistil or the carpel. Pistil consists of an ovary enclosing one to many ovules. Within ovules are present highly reduced female gametophytes termed embryo-sacs. The embryo-sac formation is preceded by meiosis. Hence, each of the cells of an embryo-sac is haploid.	The dicotyledons are characterised by seeds having two cotyledons, **reticulate venations in leaves, and tetramerous or pentamerous flowers, i.e. having four or five memerbs in each floral whorls. The monocotyledons on the other hand are characterised by single cotyledonous seeds, parallel venation in leaves, and trimerous flowers having three members in each floral whorls.** The male sex organs in a flower is the stamen. **Each stamen consists of a slender filament with an anther at the tip. Within the anthers, the pollen mother cell divide by meiosis to produce microspores which matures into pollen grains.** The female sex organs in a flower is the pistil. **Pistil consists of an ovary at its base, a long slender style and stigma. Inside the ovary, ovules are present. Generally each ovule has a megaspore mother cell that undergoes meiosis to form four haploid megaspore. Three of them degenerate and one divide to form the embryo sac.**	
11	42	3. PLANT KINGDOM	All seed-bearing plants i.e. gymnosperms and angiosperms, follow this pattern (Figure 3.7 b).	An alga, Fucus sp., represents this pattern (Fig. 3.7b). In addition, all seed bearing plants i.e., gymnosperms and angiosperms, **follow this patterns with some variations, wherein, the gametophytic phase is few to multi-celled.**	
12	49	4. ANIMAL KINGDOM	 Figure 4.4 Broad classification of Kingdom Animalia based on common fundamental features	 Figure 4.4 Broad classification of Kingdom Animalia based on common fundamental features	
13	50	4. ANIMAL KINGDOM	Para 4.2.2 line number 3 - (which contain the stinging capsules or nematocytes)	(which contain the stinging capsules or nematocysts)	
14	52	4. ANIMAL KINGDOM	 Male Female Figure 4.10 Aschelminthes – Roundworm	 Male Female Figure 4.10 **Examples of** Aschelminthes Roundworm	
15	54	4. ANIMAL KINGDOM	 Figure 4.15 *Balanoglossus*		
16	54	4. ANIMAL KINGDOM			**para 4.2.10 added after line 3 - (Hemichordata have a rudimentary structure in the collar region called stomochord, a structure similar to notochord.)**
17	69	5. MORPHOLOGY OF FLOWERING PLANTS	 Figure 5.6 Modifications of stem for : (a) storage (b) support (c) protection (d) spread and vegetative propagation	 Figure 5.6 Modifications of stem for : (a) storage (b) support (c) protection (d) spread and vegetative propagation	
18	73	5. MORPHOLOGY OF FLOWERING PLANTS	Like calyx, corolla may be also free (gamopetalous) or united (polypetalous).	Like calyx, corolla may also be gamopetalous **(petals united)** or polypetalous **(petals free).**	
19	80	5. MORPHOLOGY OF FLOWERING PLANTS	Gynoecium: bicarpellary, syncarpous; ovary superior, bilocular, placenta swollen with many ovules	Gynoecium: bicarpellary **obligately placed**, syncarpous; ovary superior, bilocular, placenta swollen with many ovules, **axile**	

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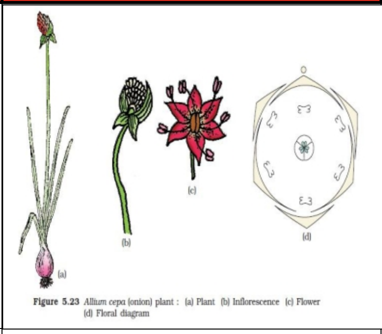
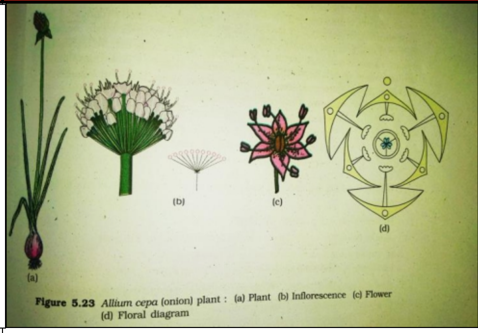
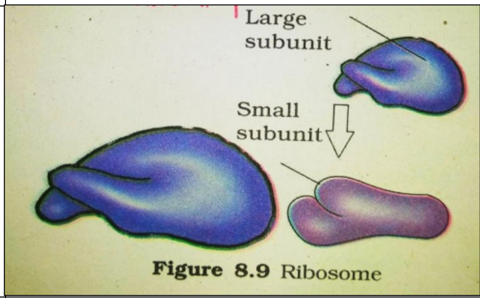
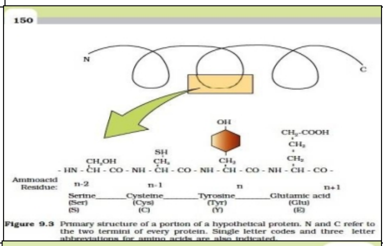
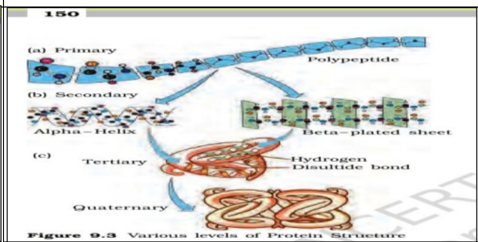
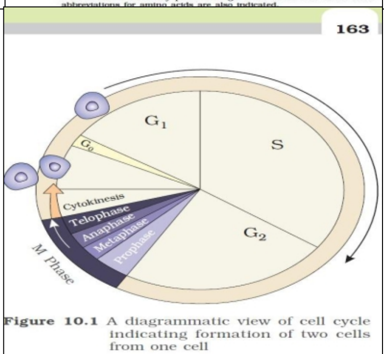
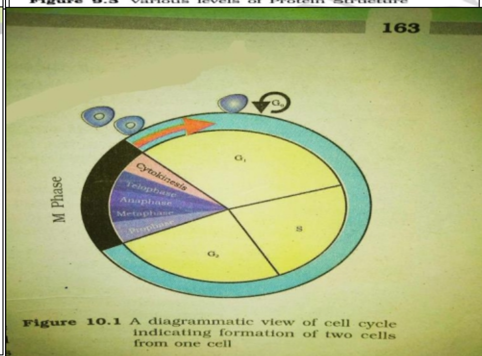
20	81	5. MORPHOLOGY OF FLOWERING PLANTS			**Diagram of Inflorescense Added**
21	90	6. ANATOMY OF FLOWERING PLANTS	When xylem and phloem within a vascular bundle are arranged in an alternate manner on different radii, the arrangement is called radial such as in roots. In conjoint type of vascular bundles, the xylem and phloem are situated at the same radius of vascular bundles.	When xylem and phloem within a vascular bundle are arranged in an alternate manner along the different radii, the arrangement is called radial such as in roots. In conjoint type of vascular bundles, the xylem and phloem are **jointly** situated at the same radius of vascular bundles.	
22	90	6. ANATOMY OF FLOWERING PLANTS	The outermost layer is **epidermis**. Many of the epidermal cells protrude in the form of unicellular root hairs.	The outermost layer is **epiblema**. Many of the **cells of epiblema** protrude in the form of unicellular root hairs.	
23	136	8. CELL: THE UNIT OF LIFE			**Diagram added in Ribosomes**
24	136	8. CELL: THE UNIT OF LIFE	The eukaryotic ribosomes are 80S while the prokaryotic ribosomes are 70S. Here 'S' stands for the sedimentation coefficient; it indirectly is a measure of density and size. Both 70S and 80S ribosomes are composed of two subunits.	The eukaryotic ribosomes are 80S while the prokaryotic ribosomes are 70S. **Each ribosome has two subunits, larger and smaller subunits (fig. 8.9) The two subunits of 80S ribosomes are 60S and 40S while that of 70S ribosomes are 50S and 30S.** Here 'S' (Svedberg's Unit) stands for the sedimentation coefficient; it indirectly is a measure of density and size. Both 70S and 80S ribosomes are composed of two subunits.	
25	144	9. BIOMOLECULES	Oils have lower melting point (e.g., **gingely** oil) and hence remain as oil in winters.	Oils have lower melting point (e.g., **gingelly** oil) and hence remain as oil in winters.	
26	150	9. BIOMOLECULES			**A diagrammatic representation of various levels of proteins**
27	163	10. CELL CYCLE AND CELL DIVISION			**Time Duration of G1 & S**
28	164	10. CELL CYCLE AND CELL DIVISION	Prophase which is the first stage of mitosis follows the S and G2 phases of interphase.	Prophase which is the first stage **of karyokinesis** of mitosis follows the S and G2 phases of interphase.	
29	164	10. CELL CYCLE AND CELL DIVISION	Initiation of the assembly of mitotic spindle, the microtubules, the proteinaceous components of the cell cytoplasm help in the process.	**Centrosome which had undergone duplication during interphase, begins to move towards opposite poles of the cell. Each centrosome radiates out microtubules called asters. The two asters together with spindle fibres forms mitotic apparatus.**	

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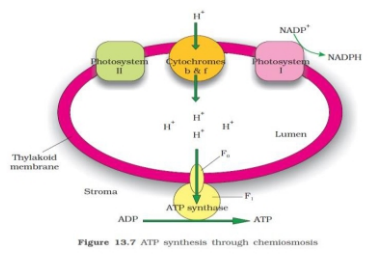
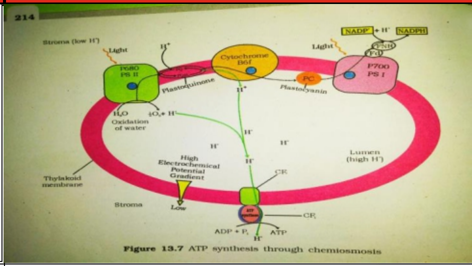
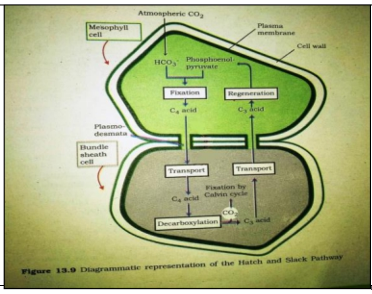
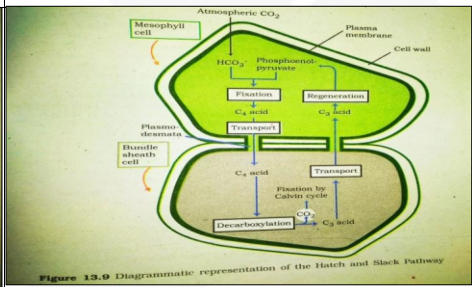
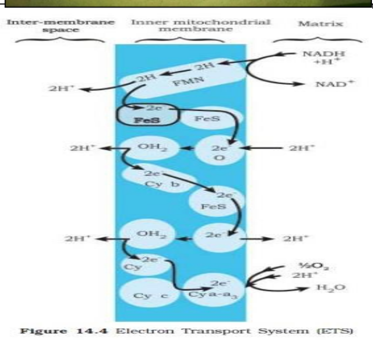
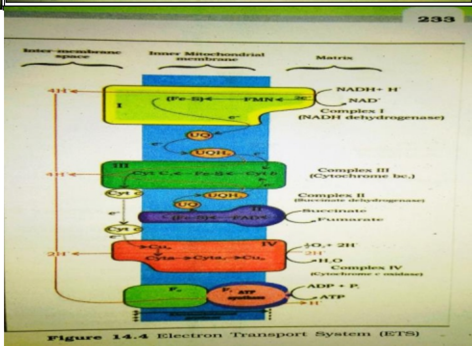
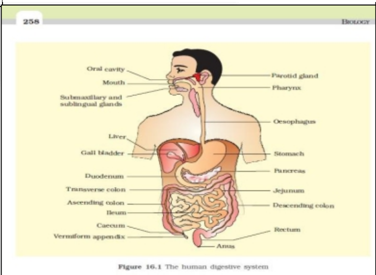
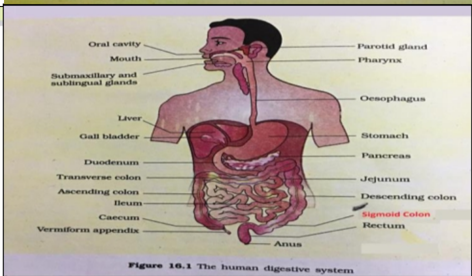
44	214	13. PHOTOSYNTHESIS IN HIGHER PLANTS	 Figure 13.7 ATP synthesis through chemiosmosis	 Figure 13.7 ATP synthesis through chemiosmosis	
45	215	13. PHOTOSYNTHESIS IN HIGHER PLANTS	of the F0 of the ATPase. The ATPase enzyme consists of two parts: one called the F0 is embedded in the membrane and forms a transmembrane channel that carries out facilitated diffusion of protons across the membrane. The other portion is called F1 and protrudes on the outer surface of the thylakoid membrane on the side that faces the stroma. The break down of the gradient provides enough energy to cause a conformational change in the F1 particle of the ATPase, which makes the enzyme synthesise several molecules of energy-packed ATP. Chemiosmosis requires a membrane, a proton pump, a proton gradient and ATPase. Energy is used to pump protons across a membrane, to create a gradient or a high concentration of protons within the thylakoid lumen. ATPase has a channel that allows diffusion of protons back across the membrane; this releases enough energy to activate ATPase enzyme that catalyses the formation of ATP.	of the **CF0 of the ATP synthase**. The **ATP synthase** enzyme consists of two parts: one called the **CF0** is embedded in the membrane and forms a transmembrane channel that carries out facilitated diffusion of protons across the membrane. The other portion is called **CF1** and protrudes on the outer surface of the thylakoid membrane on the side that faces the stroma. The break down of the gradient provides enough energy to cause a conformational change in the **CF1** particle of the **ATP synthase**, which makes the enzyme synthesise several molecules of energy-packed ATP. Chemiosmosis requires a membrane, a proton pump, a proton gradient and **ATP synthase**. Energy is used to pump protons across a membrane, to create a gradient or a high concentration of protons within the thylakoid lumen. **ATP synthase** has a channel that allows diffusion of protons back across the membrane; this releases enough energy to activate **ATP synthase** enzyme that catalyses the formation of ATP.	
46	219	13. PHOTOSYNTHESIS IN HIGHER PLANTS	 Figure 13.9 Diagrammatic representation of the Hatch and Slack Pathway	 Figure 13.9 Diagrammatic representation of the Hatch and Slack Pathway	
47	233	14. RESPIRATION IN PLANTS	 Figure 14.4 Electron Transport System (ETS)	 Figure 14.4 Electron Transport System (ETS)	**Diagram of ETS in previous of NCERT XI denotes oxidation of NADH+H$^+$ only ,so there were 3 pairs of protons i.e. 6H$^+$ released into the intermembrane space but in new diagram of ETS, oxidation of NADH+H$^+$and FADH$_2$ both are included so total protons in intermembrane space become ten i.e. 10 H$^+$.Now according to NCERT's Concept [2H$^+$ for 1 ATP].we conclude these 10H$^+$in following manner:** **1.Release of 6H$^+$ due to oxidation of NADH+H$^+$=3ATP** **2.Release of 4H$^+$ due to oxidation of FADH$_2$ =2ATP**
48	258	16. DIGESTION AND ABSORPTION	 Figure 16.1 The human digestive system	 Figure 16.1 The human digestive system	**Sigmoid colon in diagram**
49	259	16. DIGESTION AND ABSORPTION	Stomach has three parts cardiac, fundic and pyloric	Stomach has four parts cardiac,fundic, body and pyloric parts	

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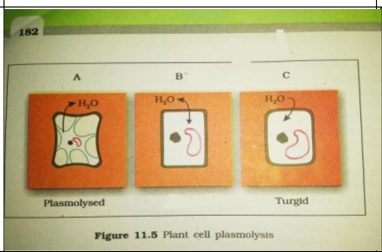
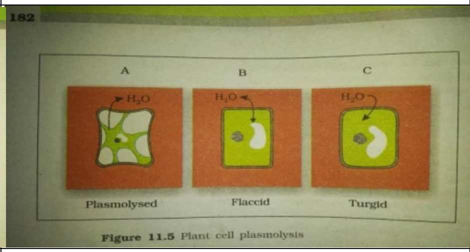
30	166	10. CELL CYCLE AND CELL DIVISION	10.2.4 Telophase At the beginning of the final stage of mitosis, i.e., telophase, the chromosomes that have reached their respective poles decondense and lose their individuality. The individual chromosomes can no longer be seen and chromatin material tends to collect in a mass in the two poles (Figure 10.2 d).	10.2.4 Telophase At the beginning of the final stage **of karyokinesis**, i.e., telophase, the chromosomes that have reached their respective poles decondense and lose their individuality. The individual chromosomes can no longer be seen and **each set of chromatin material tends to collect at each of the two poles** (Figure 10.2 d).	
31	166	10. CELL CYCLE AND CELL DIVISION	Nuclear envelope assembles around the chromosome clusters.	Nuclear envelope **develops around the chromosome clusters at each pole forming two daughter nuclei.**	
32	166	10. CELL CYCLE AND CELL DIVISION	10.2.5 Cytokinesis Mitosis accomplishes not only the segregation of duplicated chromosomes into daughter nuclei (karyokinesis), but the cell itself is divided into two daughter cells by a separate process called cytokinesis at the end of which cell division is complete (Figure 10.2 e).	10.2.5 Cytokinesis Mitosis accomplishes not only the segregation of duplicated chromosomes into daughter nuclei (karyokinesis), but the cell itself is divided into two daughter cells **by the separation of cytoplasm** called cytokinesis at the end of which cell division gets completed (Figure 10.2 e).	
33	167	10. CELL CYCLE AND CELL DIVISION	Meiosis involves pairing of homologous chromosomes and recombination between them.	Meiosis involves pairing of homologous chromosomes and recombination between **non-sister chromatids of homologous chromosomes.**	
34	168	10. CELL CYCLE AND CELL DIVISION	During this stage bivalent chromosomes now clearly appears as tetrads.	During this stage, **the four chromatids of each bivalent chromosomes becomes distinct and clearly appears as tetrads.**	
35	169	10. CELL CYCLE AND CELL DIVISION	The stage between the two meiotic divisions is called interkinesis and is generally short lived.	The stage between the two meiotic divisions is called interkinesis and is generally short lived.**There is no replication of DNA during interkinesis.**	
36	169	10. CELL CYCLE AND CELL DIVISION	Anaphase II: It begins with the simultaneous splitting of the centromere of each chromosome (which was holding the sister chromatids together), allowing them to move toward opposite poles of the cell (Figure 10.4).	Anaphase II: It begins with the simultaneous splitting of the centromere of each chromosome (which was holding the sister chromatids together), allowing them to move toward opposite poles of the cell (Figure 10.4) **by shortening of microtubules attached to kinetochores.**	
37	178	11. TRANSPORT IN PLANTS	11.1.3 Active Transport Active transport uses energy to pump molecules against a concentration gradient. Active transport is carried out by membrane-proteins.	11.1.3 Active Transport Active transport uses energy **to transport** and pump molecules against a concentration gradient. Active transport is carried out by membrane-proteins.	
38	179	11. TRANSPORT IN PLANTS	If some solute is dissolved in pure water, the solution has fewer free water and the concentration of water decreases, reducing its water potential.	If some solute is dissolved in pure water, the solution has fewer free water molecules and the concentration **(free energy)** of water decreases, reducing its water potential.	
39	182	11. TRANSPORT IN PLANTS			
40	183	11. TRANSPORT IN PLANTS	In large and complex organisms, often substances have to be moved across very **large** distances	In large and complex organisms, often substances have to be moved **long** distances	
41	209	13. PHOTOSYNTHESIS IN HIGHER PLANTS	You have studied the structure of chloroplast in Chapter 8. Within the chloroplast there is the membranous system consisting of grana, the stroma lamellae, and the fluid stroma (Figure 13.2). There is a clear division of labour within the chloroplast. The membrane system is responsible for trapping the light energy and also for the synthesis of ATP and NADPH. In stroma, enzymatic**reactions incorporate CO2 into** the plant leading to the synthesis of sugar, which in turn forms starch. The former set of reactions, since they are directly light driven are called light reactions. The latter are not directly light driven but are dependent on the products of light reactions (ATP and NADPH). Hence, to distinguish the latter they are called, by convention, as dark reactions.	You have studied the structure of chloroplast in Chapter 8. Within the chloroplast there is the membranous system consisting of grana, the stroma lamellae, and the matrix stroma (Figure 13.2). There is a clear division of labour within the chloroplast. The membrane system is responsible for trapping the light energy and also for the synthesis of ATP and NADPH.**In stroma, enzymatic reactions synthesise sugar, which in turn forms starch.** The former set of reactions, since they are directly light driven are called light reactions **(photochemical reactions).** The latter are not directly light driven but are dependent on the products of light reactions (ATP and NADPH). Hence, to distinguish the latter they are called, by convention, as dark reactions **(carbon reactions).**	
42	212	13. PHOTOSYNTHESIS IN HIGHER PLANTS	transfer to another accepter, and finally down hill to NADP+ **causing** it to be reduced to NADPH + H+ is called the Z scheme, due to its characterstic shape (Figure 13.5).	transfer to another accepter, and finally down hill to NADP+ reducing it to NADPH + H+ is called the Z scheme, due to its characterstic shape (Figure 13.5).	
43	214	13. PHOTOSYNTHESIS IN HIGHER PLANTS	Why are we so interested in the proton gradient? This gradient is important because it is the breakdown of this gradient that leads to release of energy.	Why are we so interested in the proton gradient? This gradient is important because it is the breakdown of this gradient that leads to synthesis of ATP	

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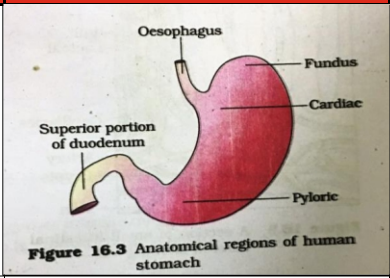
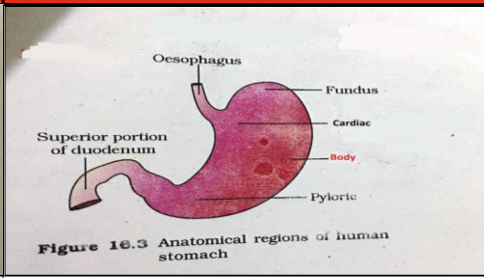
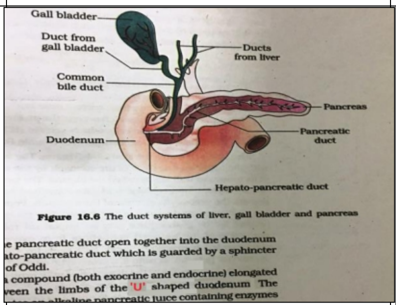
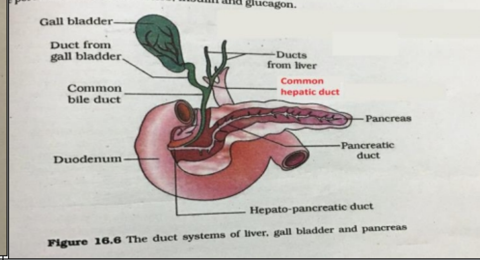
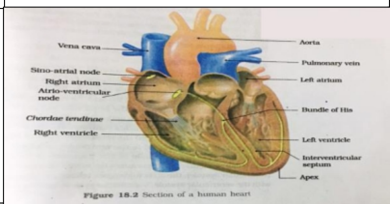
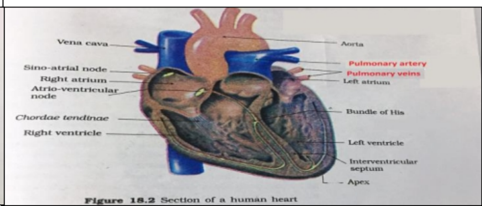
50	259 fig16.3	16. DIGESTION AND ABSORPTION	 **Figure 16.3** Anatomical regions of human stomach	 **Figure 16.3** Anatomical regions of human stomach	
51	259	16. DIGESTION AND ABSORPTION	**U** shaped duodenum	**C** shaped duodenum	
52	261	16. DIGESTION AND ABSORPTION	 **Figure 16.6** The duct systems of liver, gall bladder and pancreas e pancreatic duct open together into the duodenum ato-pancreatic duct which is guarded by a sphincter of Oddi. a compound (both exocrine and endocrine) elongated veen the limbs of the '**U**' shaped duodenum. The	is a compound (both exocrine and endocrine) elongated etween the limbs of the **C** shaped duodenum. The ecretes an alkaline pancreatic juice containing enzymes portion secretes hormones, insulin and glucagon.  **Figure 16.6** The duct systems of liver, gall bladder and pancreas	**U shaped duodenum changed to C shaped duodenum**
53	264	16. DIGESTION AND ABSORPTION	However,someof the substances like **fructose** and some amino acids are absorbed with the help of the carrier **ions like Na+**. This mechanism is called the facilitated transport.	However,someof the substances like **glucose** and some amino acids are absorbed with the help of the carrier **proteins**. This mechanism is called the facilitated transport.	
54	268	17. BREATHING AND EXCHANGE OF GASES	Gills and lungs	Gills**(branchial respiration)**,lungs**(pulmonary respiration)**	
55	268	17. BREATHING AND EXCHANGE OF GASES	Reptiles birds and mammals respire through lungs	**Amphibians,**reptiles,birds & mammals respire through lungs.	
56	268	17. BREATHING AND EXCHANGE OF GASES	Amphibia respire through moist skin also	Amphibia respire through moist skin**(cutaneous respiration)** also	
57	269	17. BREATHING AND EXCHANGE OF GASES	The nasal chamber opens into **nasopharynx which is a portion of pharynx** the common passage for food and air	The nasal chamber opens into **pharynx the portion which is** common passage for food and air	
58	269	17. BREATHING AND EXCHANGE OF GASES	**Nasopharynx** opens through **glottis** of larynx region in to the trachea	The **pharynx** opens through larynx region In to the trachea	
59	283	18. BODY FLUIDS AND CIRCULATION	 **Figure 18.2** Section of a human heart	 **Figure 18.2** Section of a human heart	
60	294	19. EXCRETORY PRODUCTS AND THEIR ELIMINATION	Henles loop—reabsorption in this segment is minimum.	Henles loop—reabsorption is minimum **in its ascending limb.**	
61	298	19. EXCRETORY PRODUCTS AND THEIR ELIMINATION	Para19.7–our lungs remove large amount of Co2(18 litres /day)	Our lungs remove large amount of CO2**(approximately 200 ml/minute)**	
62	298 para 19.8	19. EXCRETORY PRODUCTS AND THEIR ELIMINATION	Blood drained from a convenient artery is pumped into a dialysing unit.	**During the process of haemodialysis the** blood drained from a convenient artery is pumped into a dialysing unit **called artificial kidney.**	