BIOLOGY - NCERT UPDATES
FOR CLASS XII

Biocell Medical Institute

Dear Students and Teachers,
NCERT has revised the previous edition of biology book and incorporated certain new facts, figures and examples. Ambiguous and controversial facts have also been removed as well as corrections have been made wherever required.
Aakash brings to you, all the applied changes/additions/deletions in new text of NCERT.

CHAPTER 1- REPRODUCTION IN ORGANISMS

S. No.	Pg. No.	NCERT Headings	Previous Content	Updated Content
1.	6.	1.1		Under unfavourable condition the Amoeba withdraws its pseudopodia and secretes a three-layered hard covering or cyst around itself. This phenomenon is termed as encystation. When favourable conditions return, the encysted Amoeba divides by multiple fission and produces many minute amoeba or pseudopodiospores; the cyst wall bursts out, and the spores are liberated in the surrounding medium to grow up into many amoebae. This phenomenon is known as sporulation.
2.	8	1.1		In some organisms, if the body breaks into distinct pieces (fragments) each fragment grows into an adult capable of producing offspring (e.g., Hydra). This is also a mode of asexual reproduction called fragmentation.
3.	16	Summary	Budding and gemmule formation are the common asexual methods seen in lower animals.	Budding and gemmule formation are the common asexual methods seen in **lower** animals.

CHAPTER 3- HUMAN REPRODUCTION

4.	51	3.4		Menstrual Hygiene Maintenance of hygiene and sanitation during menstruation is very important. Take bath and clean yourself regulary. Use sanitary napkins or clean homemade pads. Change sanitary napkins or homemade pads after every 4-5 hrs as per the requirement. Dispose of the used sanitary napkins properly wrapping it with a used paper.Do not throw the used napkins in the drainpipe of toilets or in the open area. After handling the napkin wash hands with soap.

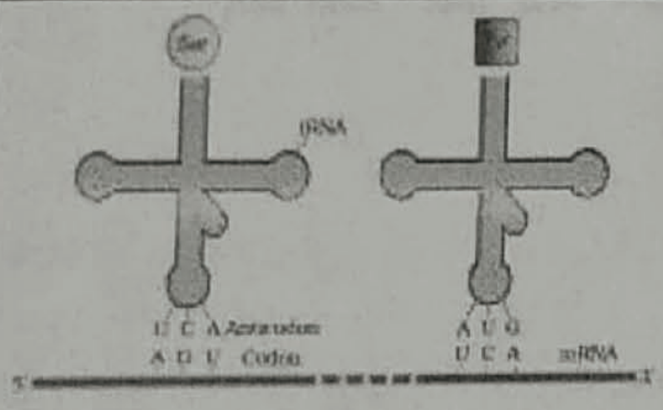
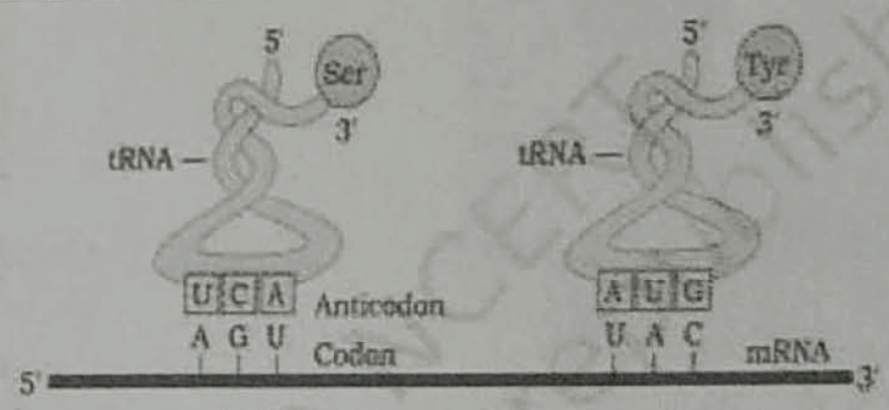
CHAPTER 4- REPRODUCTIVE HEALTH

5.	58	4.1	Statutory ban on amniocentesis (a foetal sex determination test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo) for sex-determination to legally check increasing female foeticides, masssive child immunisation, etc., are some programmes that merit mention in this connection.	Statutory ban on amniocentesis for sex-determination to legally check increasing menace female foeticides, masssive child immunisation, etc., are some programmes that merit mention in this connection. In aminocentesis some of the amniotic fluid of the developing foetus is taken to analyse the fetal cells and dissolved substances. This procedure is used to test for the presence of certain genetic disorders such as, down syndrome, haemoplilia, sickle-cell anemia, etc., determine the survivability of the foetus.
6.	59	4.2	The world population which was around 2 billion (2000 million) in 1900 rocketed to about 6 billion by 2000.	The world population which was around 2 billion (2000 million) in 1900 rocketed to about 6 billion by 2000 and **7.2 billion in 2011**
7.	59	4.2	Out population which was approximately 350 million at the time of our independence reached close to the billion mark by 2000 and crossed 1 billion in May 2000.	Our population which was approximately 350 million at the time of our independence reached close to the billion mark by 2000 and crossed **1.2 billion in May 2011.**
8.	59	4.2	According to the 2011 census report, the population growth rate was less than 2 percent, i.e. 20/1000/year, a rate at which our population could increase rapidly	According to the **2011** census report, the population growth rate was **less than 2 percent, i.e. 20/1000/year, a rate at which our population could increase rapidly**
9.	62	4.3		The Medical Termination of Pregnancy (Amendment) Act, 2017 was enacted by the government of India with the intension of reducing the incidence of illegal abortion and consequent maternal mortality and morbidity. According to this Act, a pregnancy may be terminated on certain considered grounds within the first 12 weeks of pregnancy on the opinion of one registered medical practitioner. If the pregnancy has lasted more than 12 weeks, but fewer than 24 weeks, two registered medical practitioners must be of the opinion, formed in good faith, that the required ground exist. The grounds for such termination of pregnancies are :(I) The continuation of the pregnancy would involve a risk to the life of the pregnant woman or of grave injury physical or mental health : or (ii) There is a substantial risk that of the child were born, it would suffer from such physical or mental abnormalities as to be seriously handicapped.
10.	63	4.4	Sexually Transmitted Diseases (STDs)Diseases or infections which are transmitted through sexual intercourse are collectively called sexually transmitted diseases (STD) or venereal diseases (VD) or reprodcutive tract infections (RTI). Gonorrhoea, syphilis, genital herpes, chlamydiasis, genital warts, trichomoniasis, hepatitis-B and of course , the most discussed infection in the recent years. HIV leading to AIDS are some of the common STDs.	Sexually Transmitted **Infections (STIs)** Diseases or infections which are transmitted through sexual intercourse are collectively called sexually transmitted Infections **(STI)** or venereal diseases (VD) or reprodcutive tract infections (RTI). Gonorrhoea, syphilis, genital herpes, chlamydiasis, genital warts, trichomoniasis, hepatitis-B and of course , the most discussed infection in the recent years. HIV leading to AIDS are some of the common **STIs.**

CHAPTER 5- PRINCIPLES OF INHERITANCE AND VARIATION

S. No.	Pg. No.	NCERT Headings	Previous Content	Updated Content
11.	85	5.4		Polygenic Inheritance*
12.	85	5.5		Pleiotropy*
13.	87	5.6.2		Sex Determination in Honey Bee*
14.	89	5.8.2		Colour Blindness*
15.	91	5.8.2		Thalassemia*

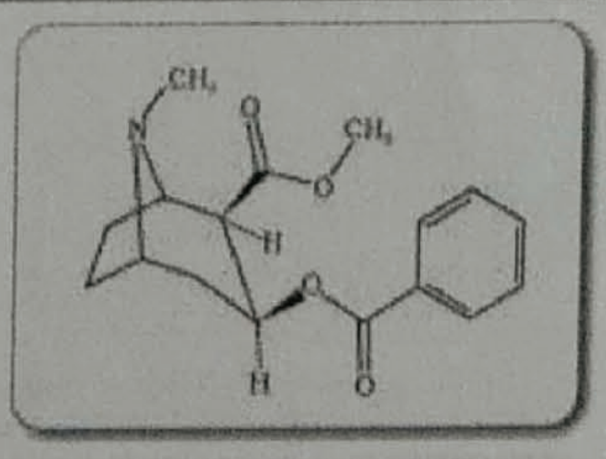
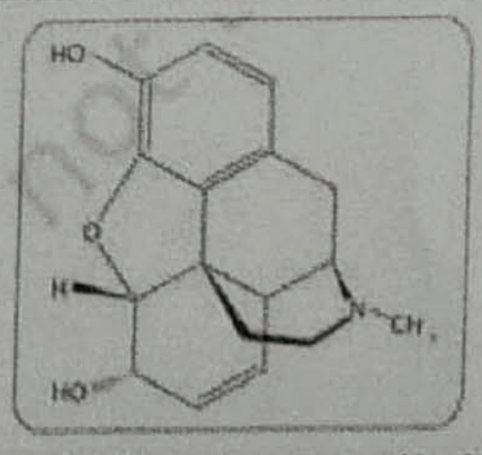
CHAPTER 6- MOLECULAR BASIS OF INHERITANCE

16.	96	6.1.1	A nitrogenous base is linked to the pentose sugar through a N-glycosidic linkage to form a nucleoside	A nitrogenous base is linked to the **OH of 1'C** pentose sugar through a N-glycosidic linkage to form a nucleoside
17.	96	6.1.1	When a phosphate group is linked to 5' -OH of a nucleoside through phosphoester linkage.	When a phosphate group is linked to **OH of 5'C** of a nucleoside through phosphoester linkage.
18.	97	6.1.1	Similarly, at the other end of the polymer the ribose has a free 3' -OH group which is referred to as 3'- end of the polynucleotide chain	Similarly, at the other end of the polymer the **sugar** has a free OH of 3'C group which is referred to as 3'- end of the polynucleotide chain.
19.	107	6.5	Except the adenosine now forms base pair with uracil instead of thymine.	Except the adenosine **complements** now forms base pair with uracil instead of thymine.
20.	111	6.6	The process of translation requires transfer of genetic information from a polymer of nucleotides to a polymer of amino acids.	The process of translation requires transfer of genetic information from a polymer of nucleotides to **from a** polymer of amino acids.
21	112	6.6	The salient features of genetic code are as follows: (i) The codon is triplet. 61 codons code for amino acids and 3 codons do not code for any amino acids, hence they function as stop codons. **(ii) One codon codes for only one amino acid, hence, it is unambiguous and specific.** (iii) Some amino acids are coded by more than one codon, hence the code is degenerate. (iv) The codon is read in mRNA in a contiguous fashion. There are no punctuations. (v) The code is nearly universal: for example, from bacteria to human UUU would code for Phenylalanine (phe). Some exceptions to this rule have been found in mitochondrial codons, and in some protozoans. (vi) AUG has dual functions. It codes for Methionine (met) , and it also act as initiator codon.	The salient features of genetic code are as follows: (I) The codon is triplet. 61 codons code for amino acids and 3 codons do not code for any amino acids, hence they function as stop codons. (ii) Some amino acids are coded by more than one codon, hence the code is degenerate. (iii) The codon is read in mRNA in a contiguous fashion. There are no punctuations. (iv) The code is nearly universal: for example, from bacteria to human UUU would code for Phenylalanine (phe). Some exceptions to this rule have been found in mitochondrial codons, and in some protozoans. (v) AUG has dual functions. It codes for Methionine (met) , and it also act as initiator codon. **(vi) UAA, UAG, UGA are stop terminator codons**
22	144	Fig. 6.12	 **Figure 6.12** tRNA - the adapter molecule	 **Figure 6.12** tRNA - the adapter molecule

CHAPTER 7- EVOLUTION

23.	129	7.3		Embryological support for evolution was also proposed by Ernst Heckel based upon the observation of certain features during embryonic stage common to all vertebrates that are absent in adult. For example, the embryos of all vertebrates including human develop a row of vestigial gill slit just behind the head but it is a functional organ only in fish and not found in any other adult vertebrates. However, this proposal was disapproved on careful study performed by Karl Ernst von Baer. He noted that embryos never pass through the adult stages of other animals.*
24.	141	7.9	Pre-historic cave art developed about 18,000 years ago. Agriculture came around 10,000 years back and human settlements started	Pre-historic cave art developed about 18,000 years ago **One such cave paintings by Pre-historic humans can be seen at Bhimbetka rock shelter in Raisen district of Madhya Pradesh.** Agriculture came around 10,000 years back and human settlements started.

CHAPTER 8- HUMAN HEALTH AND DISEASE

25.	158	Fig. 8.7	 **Figure 8.7** Chemical structure of Morphine	 **Figure 8.7** Chemical structure of Morphine
26.	159	8.5	Drugs like barbiturates, amphetamines, benzodiazepines, **lysergic acid diethyl amides (LSD),** and other similar drugs, that are normally used as medicines to help patients cope with mental illnesses like depression and insomnia, are often abused.	Drugs like barbiturates, amphetamines, benzodiazepines, and other similar drugs, that are normally used as medicines to help patients cope with mental illnesses like depression and insomnia, are often abused.

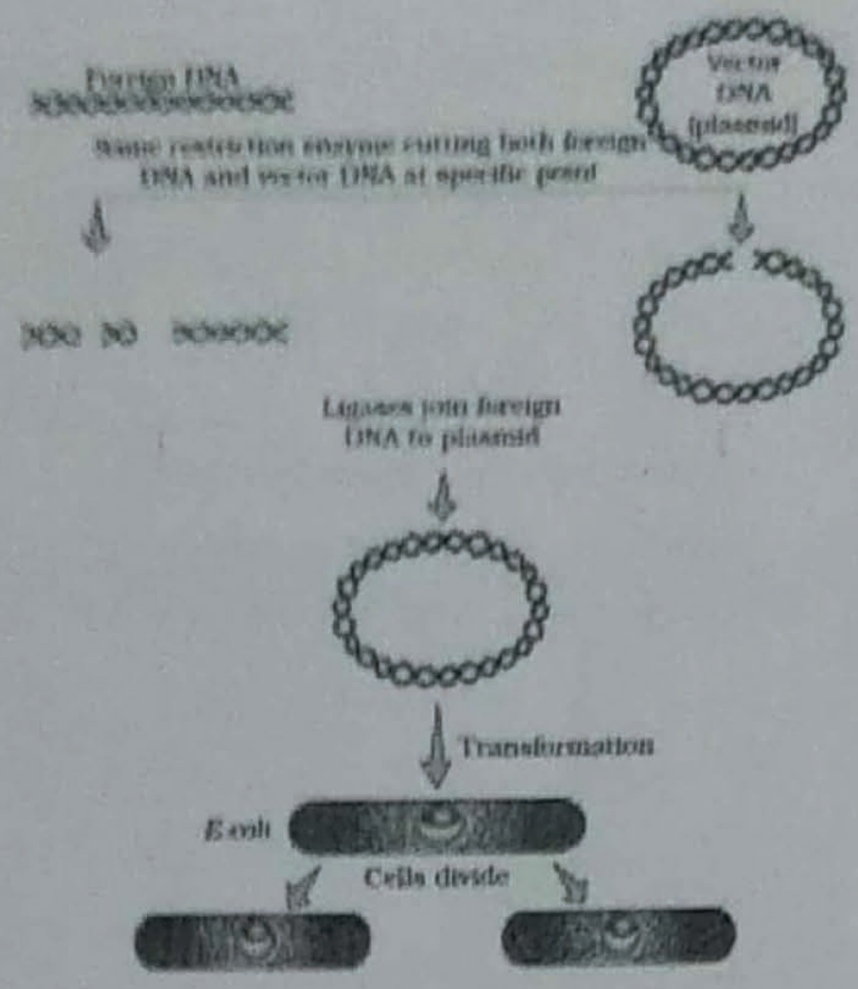
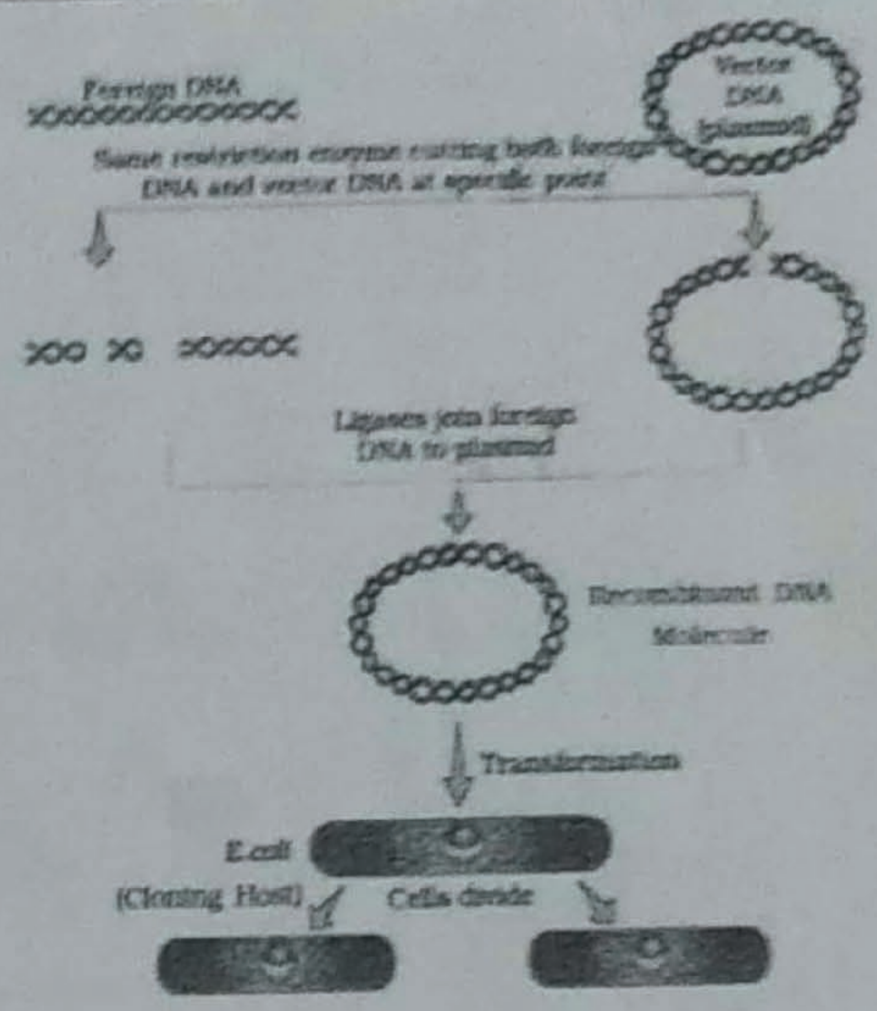
CHAPTER 9- STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION

Sr. No.	Page No.	NCERT Headings	Previous Content	Updated Content
[illegible]	176	9.3	Microbes are being grown on an industrial scale as source of good protein.	*Microbes are being grown on an industrial scale as source of good protein.* ~~Blue-~~ **green algae!**
[illegible]	176	9.3	**It has been calculated that a 250 Kg cow produces 200 g of protein per day. In the same period, 250g of a micro-organism** like *Methylophilus methylotrophus*, because of its high rate of biomass production and growth, can be expected to produce 25 tonnes of protein.	**Certain bacterial species like** *Methylophilus methylotrophus*, because of its high rate of biomass production and growth, can be expected to produce 25 tonnes of protein.

CHAPTER 10- MICROBES IN HUMAN WELFARE

29.	179	Introduction	Microbes are diverse- protozoa, bacteria, fungi and microscopic plants viruses, viroids and also prions that are proteinaceous infectious agents.	*Microbes are diverse- protozoa, bacteria, fungi and microscopic animal and plant viruses, viroids and also prions that are proteinaceous infectious agents.*

CHAPTER 11- BIOTECHNOLOGY: PRINCIPLES AND PROCESSES

30.	194	11.1	(ii) Maintenance of sterile (microbial contamination-free) ambience in chemical engineering processes to enable growth of only the desired microbe/eukaryotic cell in large quantities for the manufacture of biotechnological products like antibiotics, vaccines, enzymes, etc.	(ii) **Bioprocess engineering** *Maintenance of sterile (microbial contamination-free) ambience in chemical engineering processes to enable growth of only the desired microbe/eukaryotic cell in large quantities for the manufacture of biotechnological products like antibiotics, vaccines, enzymes, etc.*
31.	197	Fig. 11.2		
			Figure 11.2 Diagrammatic representation of recombinant DNA technology	**Figure 11.2** Diagrammatic representation of recombinant DNA technology
32.	199	11.2.2	The recombinant plasmids will lose tetracycline resistance due to insertion of foreign DNA but can still be selected out from non-recombinant ones by plating the transformants on ampicillin containing medium.	The recombinant plasmids will lose tetracycline resistance due to insertion of foreign DNA but can still be selected out from non-recombinant ones by plating the transformants on **tetracycline** containing medium.
33.	200	11.2.2	This results into inactivation of the enzyme, which is referred to as insertional inactivation.	This results into inactivation of **the gene** for synthesis of this enzyme, which is referred to as insertional inactivation.

CHAPTER 12- BIOTECHNOLOGY AND ITS APPLICATIONS

34.	208	12.1	(v) enhanced nutritional value of food, e.g., Vitamin 'A' enriched rice.	(v) enhanced nutritional value food , **e.g. golden rice** i.e., Vitamin 'A' enriched rice.
35.	209	12.1 (Bt Cotton)	The toxin is coded by a gene named cry.	The toxin is coded by a gene **cryIAc** named cry.

CHAPTER 13- ORGANISMS AND POPULATIONS

36.	220	13.1	**Perpetually** rain-soaked Meghalaya forests, deep ocean trenches, torrential streams, permafrost polar regions, high mountain tops, boiling thermal springs, and stinking compost pits, to name a few. Even our intestine is a unique habitat for hundreds of species of microbes.	Rain-soaked Meghalaya forests, deep ocean trenches, torrential streams, permafrost **(snow laden)** polar regions, high mountain tops, boiling thermal springs, and stinking compost pits, to name a few. Even our intestine is a unique habitat for hundreds of species of microbes.
37.	221	13.1		Each organism has an invariably defined range of conditions that it can tolerate, diversity in the resources it utilises and a distinct functional role in the ecological system, all these together comprise its niche*
38.	222	13.1.1	Water: **Next to temperature,** water is the most important factor influencing the life of organisms. In fact, life on earth originated in water and is unsustainable without water. Its availability is so limited in deserts that only special adaptations make it possible to live there	Water: Water is **another** the most important factor influencing the life of organisms. In fact, life on earth originated in water and is unsustainable without water. Its availability is so limited in deserts that only special adaptations make it possible for **organisms** to live there
39.	224	13.1.2	The organism has two other alternatives.	The organism has two other alternatives **for survival**
40.	225	13.1.3	Their stomata arranged in deep pits to minimise water loss through transpiration.	Their stomata arranged in deep pits **(sunken)** to minimise water loss through transpiration.
41.	226	13.1.3	If you had ever been to any high altitude place (>3,500m Rohtang Pass near Manali and **Mansarovar,**	If you had ever been to any high altitude place (>3,500m Rohtang Pass near Manali and **Leh,**

S. No.	Pg. No.	NCERT Headings	Previous Content	Updated Content
CHAPTER 13 - ORGANISMS AND POPULATIONS				
42.	226	13.1.3	How do they live under such **crushing** pressures and do they have any special enzymes?	How do they live under such **high** pressures and do they have any special enzymes?
43.	236	13.2.4 (Commensalism)	As they move, stir up and flush out from the vegetation insects that otherwise might be difficult for the egrets to find and catch	As they move, stir up and flush out **insects** from the vegetation that otherwise might be difficult for the egrets to find and catch.
CHAPTER 14 - ECOSYSTEM				
44.	250	14.6	During succession some species colonise an area and **their populations become more numerous**, whereas populations of other species decline and even disappear.	During succession some species colonise an area and whereas populations of other species decline and even disappear.
45.	250	14.6	Succession is hence a process that starts where no living organisms are there	Succession is hence a process that starts in **an area** where no living organisms are there
46.	253	14.7	What is important is to appreciate that nutrients which are never lost from the ecosystems, they are recycled time and again indefinitely.	What is important is to appreciate that nutrients which are never lost from the ecosystems, **rather** they are recycled time and again indefinitely
47.	256	Summary	An ecosystem is a functional unit of nature and comprises abiotic and biotic components.	An ecosystem is a **structural and** functional unit of nature and comprises abiotic and biotic components.
CHAPTER 15 - BIODIVERSITY AND CONSERVATION				
48.	266	15.2.2		(Organisms facing a very high risk of extinction in the wild in the near future)*
CHAPTER 16 - ENVIRONMENTAL ISSUES				
49.	278	16.3	Burning reduces the volume of the wastes, although it is generally not burnt to completion and open dumps often serve as the breeding ground for rats and flies.	Burning reduces the volume of the wastes, although it is generally not completely burnt to completion and open dumps often serve as the breeding ground for rats and flies.

* This content was previously given as Supplementary Material at the end of the NCERT book and now added in the main text of their respective chapters.