

NEET (UG) · CLASS 11 & 12 · FREE E-BOOK

Biology

Ratta Funda

Hinglish mnemonics for every NCERT chapter:
lists, orders and examples you will never forget

32 Chapters

Hinglish Mnemonics

Free E-book



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www.mastertestingagency.com

How to use this book

1. Read the funda aloud. Say the line two or three times. A silly sentence sticks far better than a list.

2. Capital letters are the code. Each capital letter (or word) in the funda stands for one item, in the same order, shown in the third column.

3. Funda first, NCERT next. A mnemonic only holds the list. Learn what each item means from NCERT.

4. Last-day revision. On the day before NEET, read only the fundas: the whole book takes about 30 minutes.

Biology Ratta Funda for NEET (UG), Class 11 and 12

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All mnemonics in this book are original. Every item they decode to has been checked against the current NCERT Biology textbooks for Class 11 and 12. Chapter numbering follows the rationalised NCERT syllabus.

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PART A

Class 11

Chapters in NCERT sequence

The Living World

Taxonomic hierarchy in one line.

Ratta Funda

Topic	Funda	Matlab
Taxonomic hierarchy (high → low)	K ing P apa C hai O rders F ir G har S e	Kingdom, Phylum/Division, Class, Order, Family, Genus, Species
Defining features of life	M era C ell C onscious hai	Metabolism, Cellular organisation, Consciousness (growth and reproduction are not defining)
Naming codes	B otany ke liye B otanical, Z oo ke liye Z oological	ICBN for plants, ICZN for animals

Biological Classification

Five kingdoms and the groups inside them.

Ratta Funda

Topic	Funda	Matlab
Five kingdoms	M era P yaara F auji P appu A aya	Monera, Protista, Fungi, Plantae, Animalia
Archaeobacteria	M era H ostel T handa	Methanogens, Halophiles, Thermoacidophiles
Protozoan groups	A aj F ilm C halo S aath	Amoeboid, Flagellated, Ciliated, Sporozoans
Phycomycetes examples	A aj M ummy R oti banayegi	Albugo, Mucor, Rhizopus
Ascomycetes examples	A chha C hacha N ahi P ehchanta Y aar	Aspergillus, Claviceps, Neurospora, Penicillium, Yeast
Basidiomycetes examples	A unty U lta P aratha	Agaricus (mushroom), Ustilago (smut), Puccinia (rust)
Deuteromycetes examples	Duet mein A CT karo	Alternaria, Colletotrichum, Trichoderma
Viroid vs prion	Viroid = R NA nanga; Prion = P rotein pagal	Viroid: free RNA, no protein coat; prion: misfolded protein

Plant Kingdom

Algae examples, pteridophyte classes and heterospory.

Ratta Funda

Topic	Funda	Matlab
Green algae (Chlorophyceae)	C halo V olvo U thao S piti C halo	Chlamydomonas, Volvox, Ulothrix, Spirogyra, Chara
Brown algae (Phaeophyceae)	E k D in L adka S agar mein F isla	Ectocarpus, Dictyota, Laminaria, Sargassum, Fucus
Red algae (Rhodophyceae)	P appu P ura G har G humaya	Polysiphonia, Porphyra, Gracilaria, Gelidium
Stored food of algae	G reen = S tarch, B rown = M annitol- L aminarin, R ed = F loridean	Chlorophyceae starch; Phaeophyceae mannitol and laminarin; Rhodophyceae floridean starch
Pteridophyte classes	P yaare L adke S ab P adho	Psilopsida, Lycopsida, Sphenopsida, Pteropsida
Heterosporous pteridophytes	S irf S aath vaale	Selaginella, Salvinia
Life cycles	H ap = V olvo- S piro; D ip = seed + F ucus	Haplontic: Volvox, Spirogyra; diplontic: seed plants and Fucus

Animal Kingdom

Phyla in NCERT order and the vertebrate classes.

Ratta Funda

Topic	Funda	Matlab
Non-chordate phyla (NCERT order)	P inky C hachi C hote P akode A ur A loo A aj M angayi E k dum H ot	Porifera, Coelenterata, Ctenophora, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, Hemichordata
Vertebrate classes	C halo C hai O rders A ur R asgulle A aj M angao	Cyclostomata, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves, Mammalia
Chordate features	N ana D ada P ota	Notochord, Dorsal hollow nerve cord, Pharyngeal gill slits (plus post-anal tail)
Coelom types	A loo P uri C hole	Acoelomate (flatworms), Pseudocoelomate (roundworms), Coelomate (annelids onward)
Heart chambers	M achhli 2 , M endak 3 , M agarmachh 4	Fishes 2, amphibians and most reptiles 3, crocodiles, birds and mammals 4
Metagenesis	O belia O lta-palta	Obelia alternates polyp and medusa

Morphology of Flowering Plants

Placentation, aestivation and stem modifications.

Ratta Funda

Topic	Funda	Matlab
Placentation types	M ummy A aj P aratha F ree B anayegi	Marginal, Axile, Parietal, Free central, Basal
Placentation examples	M atar · A xile = Tamatar-Nimbu-Gudhal · P arietal = Sarson · F ree = Dianthus · B asal = Surajmukhi	Pea; tomato, lemon, China rose; mustard, Argemone; Dianthus, Primrose; sunflower, marigold
Aestivation types	V o T era I ce-cream V ala	Valvate, Twisted, Imbricate, Vexillary
Aestivation examples	V alvate = C alotropis · T wisted = B hindi-Kapas-Gudhal · I mbricate = G ulmohar-Cassia · V exillary = M atar-Sem	Calotropis; lady's finger, cotton, China rose; gulmohur, Cassia; pea, bean
Underground stems	A loo = T uber, A drak = R hizome, A rbi = C orm	Potato tuber, ginger rhizome, Colocasia corm
Pea corolla	1 Standard, 2 Wings, 2 Keel = Ek-Do-Do	C1+2+(2) in Fabaceae
Ovary position	H igh (upar), P ar (beech), E ndi (neeche)	Hypogynous (superior), perigynous (half-inferior), epigynous (inferior)

Anatomy of Flowering Plants

Tissues and the dicot/monocot difference.

Ratta Funda

Topic	Funda	Matlab
Simple permanent tissues	P apa C hai S ugar	Parenchyma, Collenchyma, Sclerenchyma
Xylem elements	T V F an P ankha	Tracheids, Vessels, Xylem Fibres, Xylem Parenchyma
Phloem elements	S ab C halo P icnic F atafat	Sieve tubes, Companion cells, Phloem Parenchyma, Phloem Fibres
Root xylem patches	D icot = D o se chaar; M onocot = M any	Dicot root 2-4 (di- to tetrarch); monocot root more than 6 (polyarch)
Endarch vs exarch	S tem E ndarch; R oot E xarch: " SE RE "	Protoxylem towards centre in stem, towards periphery in root
Monocot stem bundles	S cattered, C losed: " SC bus"	Scattered, closed vascular bundles

Structural Organisation in Animals

Tissue types and the frog.

Ratta Funda

Topic	Funda	Matlab
Four animal tissues	Ek C hai M ein N amak	Epithelial, Connective, Muscular, Neural
Cell junctions	TAG lagao	Tight, Adhering, Gap junctions
Tendon vs ligament	T endon = M uscle–bone (TM); L igament = B one–bone (LB)	Tendon joins muscle to bone; ligament joins bone to bone
Muscle types	S kele S triped, S mooth S ada, C ardiac C ross-linked	Skeletal striated; smooth unstriated; cardiac striated with intercalated discs
Frog sleep	S ummer = A estivation, W inter = H ibernation ("SA-WH")	Summer sleep aestivation; winter sleep hibernation

Cell: The Unit of Life

Chromosome types, plastids and the endomembrane system.

Ratta Funda

Topic	Funda	Matlab
Chromosomes by centromere (middle → end)	M era S ona A aj T oota	Metacentric, Sub-metacentric, Acrocentric, Telocentric
Leucoplasts	A ata, T el, D al	Amyloplast (starch), elaioplast (oil), aleuroplast (protein)
Endomembrane system	Ek G ol L addoo V aapas	ER, Golgi, Lysosome, Vacuole (not mitochondria, chloroplast, peroxisome)
Ribosomes	Pro 70, Eu 80	Prokaryotes 70S (50S + 30S); eukaryotes 80S (60S + 40S)
Cilia vs centriole	9 + 2 chale, 9 × 3 ruke	Cilia/flagella 9+2 microtubules; centriole 9 triplets
Golgi faces	C is = C oming, T rans = T aking out	Cis (forming) face receives; trans (maturing) face releases

Biomolecules

Enzyme classes, bases and aromatic amino acids.

Ratta Funda

Topic	Funda	Matlab
Six enzyme classes	Om Tumhe Hamesha Laddoo Itne Laaye	Oxidoreductases, Transferases, Hydrolases, Lyases, Isomerases, Ligases
Purines	Pure Aur Gold	Purines: Adenine, Guanine
Pyrimidines	CUT the Py	Pyrimidines: Cytosine, Uracil, Thymine
Aromatic amino acids	Tea Pe Tea	Tyrosine, Phenylalanine, Tryptophan
Protein structure	Pehle Seedha, phir Teda, phir Queue	Primary (sequence), Secondary (helix), Tertiary (folding), Quaternary (subunits)
Most abundant proteins	Collagen = Chidiyaghar (animals), RuBisCO = Raja (whole earth)	Collagen most abundant in animals; RuBisCO in the biosphere

Cell Cycle and Cell Division

Phases of the cycle, mitosis and prophase I.

Ratta Funda

Topic	Funda	Matlab
Cell cycle	Gaadi Shehar Gayi Mela	G1, S, G2, M phase
Mitosis stages	Pappu Mummy Aur Tommy	Prophase, Metaphase, Anaphase, Telophase
Prophase I sub-stages	Lalu Zara Pakode Do Didi	Leptotene, Zygotene, Pachytene, Diplotene, Diakinesis
What happens in prophase I	Z = Zipper (synapsis), P = Paar (crossing over), D = Dikhe (chiasmata)	Zygotene synapsis; pachytene crossing over; diplotene chiasmata visible
Best stage to count chromosomes	Metaphase = Mainly line mein	Chromosomes line up on metaphase plate

Photosynthesis in Higher Plants

Scientists, C₄ plants and the Calvin cycle.

Ratta Funda

Topic	Funda	Matlab
Scientists in order	P inku I ce S ab E k V aar khaata	Priestley, Ingenhousz, Sachs, Engelmann, van Niel
C ₄ plants	M akka G anna J owar	Maize, sugarcane, sorghum
Calvin cycle steps	C ricket R un R ate	Carboxylation, Reduction, Regeneration
Photosystems	I I pehle aata, number ch hota (680); I baad mein, ba da (700)	PS II (P680) acts first in Z-scheme; PS I (P700)
C ₃ vs C ₄ first product	3 ka 3 -PGA, 4 ka O AA	C ₃ : 3-PGA; C ₄ : oxaloacetic acid (4C)
Calvin ATP and NADPH per glucose	18 saal, 12 paas	18 ATP and 12 NADPH

Respiration in Plants

ETS complexes and respiratory quotient.

Ratta Funda

Topic	Funda	Matlab
ETS complexes I → V	N ana S ona B achha C ar A aya	I NADH dehydrogenase, II Succinate dehydrogenase, III cytochrome Bc ₁ , IV Cytochrome c oxidase, V ATP synthase
RQ values	C arb E k, P rotein N au, F at S aad	Carbohydrate 1.0, protein 0.9, fat 0.7
ATP per carrier	N ADH 3 , F ADH ₂ 2	1 NADH = 3 ATP, 1 FADH ₂ = 2 ATP
Sites	G lycolysis G har (cytoplasm), K rebs K amra (matrix), E TS E dge (inner membrane)	Cytoplasm, mitochondrial matrix, inner mitochondrial membrane

Plant Growth and Development

The five plant growth regulators.

Ratta Funda

Topic	Funda	Matlab
Five PGRs	A aj G armi C he E kdam A ag	Auxin, Gibberellin, Cytokinin, Ethylene, Absciscic acid
Promoters vs inhibitor	AGC = A age G o C hal; ABA = r uk	Auxin, gibberellin, cytokinin promote; ABA inhibits
Gibberellin story	G ibberella ne G adha (foolish) seedling banaya	Bakanae disease of rice by Gibberella fujikuroi
ABA jobs	ABA = A ankh B and (stomata), A raam (dormancy)	Stomatal closure; seed and bud dormancy; stress hormone
Ethylene	E thylene = E k P aka P hal	Fruit ripening (gaseous hormone)

Breathing and Exchange of Gases

Air path, volumes and CO₂ transport.

Ratta Funda

Topic	Funda	Matlab
Air path	N ani N e P aani L iya, T hoda B achha B hi A aya	Nostrils, Nasal chamber, Pharynx, Larynx, Trachea, Bronchi, Bronchioles, Alveoli
CO ₂ transport	70-20-7 = B icarb, C arbamino, P lasma	~70% bicarbonate, 20-25% carbamino-Hb, ~7% dissolved
Vital capacity	VC = T ea + I ce + E gg	VC = TV + IRV + ERV
Breathing centres	M edulla = M aster, P ons = P ace	Respiratory rhythm centre in medulla; pneumotaxic centre in pons
Partial pressure O ₂	159 bahar, 104 andar, 40 tissue	Air 159, alveoli 104, tissues 40 mm Hg

Body Fluids and Circulation

WBCs, conduction path and valves.

Ratta Funda

Topic	Funda	Matlab
WBCs (most → least)	N ana L al M irch E k B aar	Neutrophils, Lymphocytes, Monocytes, Eosinophils, Basophils
Conduction path	S ab A ao B us P akdo	SA node, AV node, Bundle of His, Purkinje fibres
Heart valves	LAB RAT	Left Atrium Bicuspid, Right Atrium Tricuspid
Heart sounds	L ub = A V band, D ub = S emilunar band	Lub: AV valves close; dub: semilunar valves close
ECG waves	P = P ehle atria, QRS = Q uick ventricles, T = T hakaan (relax)	P atrial depolarisation, QRS ventricular, T ventricular repolarisation
Blood group donors	O = O pen donor, AB = A ll B hej do (receiver)	O universal donor, AB universal recipient

Excretory Products and their Elimination

Nephron path, waste types and hormones.

Ratta Funda

Topic	Funda	Matlab
Nephron path	G ol B hatura P aneer, H alwa, D ahi, C hai	Glomerulus, Bowman's capsule, PCT, Henle's loop, DCT, Collecting duct
Uricotelic animals	BRIL	Birds, Reptiles, Insects, Land snails
Excretory organs	F latworm– F lame, E arthworm– N ephridia, I nsect– M alpighian, P rawn– G reen	Flame cells, nephridia, Malpighian tubules, antennal/green glands
Henle's loop limbs	D own = D rink (water out), U p = U nsalt (salt out)	Descending limb permeable to water; ascending limb permeable to electrolytes, not water
RAAS order	R enin A aya, A ngiotensin A aya, A ldosterone A aya	Renin → angiotensin → aldosterone

Locomotion and Movement

Vertebrae, ribs and joints.

Ratta Funda

Topic	Funda	Matlab
Vertebrae	Nashta 7 baje, lunch 12 baje, chai 5 baje	7 cervical, 12 thoracic, 5 lumbar (then 1 sacral, 1 coccygeal)
Ribs	Saat Sachche, Teen Jhoothe, Do Udte	7 true, 3 false, 2 floating pairs
Synovial joints	K andha = ball, G hutna = hinge, G ardan = pivot, K alai = gliding, A ngutha = saddle	Shoulder ball and socket; knee hinge; atlas–axis pivot; carpals gliding; thumb saddle
Bones of one limb	1-2-8-5-14 = 30	Upper arm 1 (humerus), forearm 2, carpals 8, metacarpals 5, phalanges 14
Disorders	M yasthenia M ind ki galti (autoimmune), T etany T ight (low Ca^{2+}), G out G raains (uric acid)	Autoimmune NMJ; spasms from low calcium; uric acid crystals

Neural Control and Coordination

Brain parts, meninges and the nerve impulse.

Ratta Funda

Topic	Funda	Matlab
Meninges (out → in)	D aal A ur P aneer	Dura mater, Arachnoid, Pia mater
Hindbrain	PCM games	Pons, Cerebellum, Medulla
Forebrain	C hai T hodi H ai	Cerebrum, Thalamus, Hypothalamus
Impulse	N a andar = N aach (depolarise), K bahar = K aam khatam (repolarise)	Na^+ influx depolarises; K^+ efflux repolarises
Na–K pump	3 bahar, 2 andar	3 Na^+ out, 2 K^+ in

Chemical Coordination and Integration

Pituitary hormones, adrenal cortex and disorders.

Ratta Funda

Topic	Funda	Matlab
Anterior pituitary	G har P ar T V A aj L agega F ir	GH, PRL, TSH, ACTH, LH, FSH
Posterior pituitary	O V (Oh-wee)	Oxytocin, Vasopressin (ADH) — made in hypothalamus
Adrenal cortex zones (out → in)	G FR: N amak, C heeni, J awani	Glomerulosa (mineralocorticoids), Fasciculata (glucocorticoids), Reticularis (androgens)
Pancreas	α = A age sugar badhao (glucagon), β = B reak sugar (insulin)	α -cells glucagon, β -cells insulin
GH disorders	G igantism = G halti bachpan mein (child), A cromegaly = A dult	Excess GH in childhood vs adulthood
Gut hormones	G ol S amosa C hutney G aram	Gastrin, Secretin, CCK, GIP



PART B

Class 12

Chapters in NCERT sequence

Sexual Reproduction in Flowering Plants

Anther wall, embryo sac and pollination.

Ratta Funda

Topic	Funda	Matlab
Anther wall (out → in)	Ek Ek Mein Tum	Epidermis, Endothecium, Middle layers, Tapetum
Embryo sac	7 cell, 8 nucleus: 3-2-1-1	3 antipodals, 2 synergids, 1 egg, 1 central cell (2 polar nuclei)
Cleistogamous flowers	VOC = phool Vo Open Chhupa	Viola, Oxalis, Commelina
Water pollination	V ah, H awa nahi, Z al (jal)	Vallisneria, Hydrilla, Zostera
Albuminous seeds	G ehu M akka J au A randi	Wheat, maize, barley, castor
Non-albuminous seeds	M atar M oongphali	Pea, groundnut
Double fertilisation	1 + 1 = 2n (zygote), 1 + 2 = 3n (PEN)	Syngamy and triple fusion
False fruits	A pple, S trawberry, K aju: " ASK thalamus"	Thalamus forms part of the fruit

Human Reproduction

Ducts, oviduct, uterus and the menstrual cycle.

Ratta Funda

Topic	Funda	Matlab
Male duct path	R ahul V ed E p V log E dit U pload	Rete testis, Vasa efferentia, Epididymis, Vas deferens, Ejaculatory duct, Urethra
Male accessory glands	S ab P ani B hejo	Seminal vesicles, Prostate, Bulbourethral glands
Oviduct (ovary → uterus)	I dl A ur I ml i	Infundibulum, Ampulla, Isthmus
Uterus wall (out → in)	P apa M ummy E k	Perimetrium, Myometrium, Endometrium
Menstrual cycle phases	M era F one O ff L agta	Menstrual, Follicular, Ovulatory, Luteal
Cells of testis	S ertoli = S ervice (nourish), L eydig = L adka-hormone	Sertoli cells nourish sperm; Leydig cells make androgens
Fertilisation site	A mpulla = A ashiq milan	Sperm meets ovum in the ampulla

Reproductive Health

Contraceptives and ART.

Ratta Funda

Topic	Funda	Matlab
IUD types	Loop, C opper, H ormone: " LCH "	Lippes loop; CuT, Cu7, Multiload 375; Progestasert, LNG-20
Not fully curable STIs	Teen H : Hepatitis B, H erpes, H IV	Hepatitis B, genital herpes, HIV
ZIFT vs IUT	Z IFT = Z ero se 8 , I UT = I sse upar	ZIFT up to 8 blastomeres into Fallopian tube; IUT more than 8 into uterus
Natural methods	P adhai W ala L adka	Periodic abstinence, Withdrawal, Lactational amenorrhoea
Saheli	S aheli S aptahik	Weekly non-steroidal pill (CDRI Lucknow)
Safe MTP	P ehle 12 hafte	Relatively safe in the first trimester

Principles of Inheritance and Variation

Mendel's traits, ratios and disorders.

Ratta Funda

Topic	Funda	Matlab
Mendel's 7 traits	1 Tana, 2 Phool, 2 Phali, 2 Beej	Stem height; flower colour and position; pod shape and colour; seed shape and colour
Ratios	Mono 3:1, Di 9-3-3-1, Test 1:1	Monohybrid F ₂ phenotype, dihybrid F ₂ , monohybrid test cross
X-linked recessive	H aemo C olour, X pe sawaar	Haemophilia, colour blindness
Autosomal recessive	S ab P ade T hak C ar	Sickle-cell anaemia, Phenylketonuria, Thalassemia, Cystic fibrosis
Chromosomal disorders	D own = 21 ka extra; K linefelter = K hali-nahi XXY ; T urner = T anha XO	Trisomy 21; 47, XXY male; 45, XO female
Sex determination	G rasshopper ka O (XO), B irds ki M ummy ZW	XO type in grasshopper; female heterogametic ZW in birds
Sickle-cell change	G lu gaya, V al aaya: GAG → GUG	Glutamic acid → valine at 6th position of β-globin

Molecular Basis of Inheritance

Stop codons, RNA polymerases, lac operon and fingerprinting.

Ratta Funda

Topic	Funda	Matlab
Stop codons	Ullu Aaja Abhi, Ullu Aaja Ghar, Ullu Ghar Aaja	UAA, UAG, UGA
Start codon	AUG = Aao Uthao Gaadi	AUG: methionine, start
Eukaryotic RNA polymerases	1-2-3 = R-M-T (Ram Mohan Tiwari)	Pol I rRNA, Pol II mRNA (hnRNA), Pol III tRNA (+ 5S rRNA, snRNA)
Lac operon genes	z-y-a = Gol Paani Tikki	z: β -Galactosidase, y: Permease, a: Transacetylase
DNA fingerprinting steps	Ise Dekho Ek Baar, Haan Ab	Isolation, Digestion, Electrophoresis, Blotting, Hybridisation, Autoradiography
mRNA processing	Splice, Cap, Tail = "SCT"	Splicing, capping, tailing in eukaryotes
Experiments	Griffith Ghoda (mice), Hershey Hadka (blender), Meselson Masala (^{15}N)	Transformation; DNA is genetic material; semi-conservative replication

Evolution

Hardy-Weinberg factors and human evolution.

Ratta Funda

Topic	Funda	Matlab
Hardy-Weinberg disturbers	Gopal Ghar Mein Roti Nahi	Gene flow, Genetic drift, Mutation, Recombination, Natural selection
Human evolution order	Dada Ram Aaj Haath Hilate Nahi, Sote	Dryopithecus, Ramapithecus, Australopithecus, Homo habilis, Homo erectus, Neanderthal, Homo sapiens
Brain sizes	Habilis 650-800, Erectus 900, Neanderthal 1400	Cranial capacity in cc
Homologous vs analogous	Homo = Hamesha same jad; Ana = Alag jad	Same origin (divergent) vs different origin (convergent)
Selection types	Sab Dekho Dono taraf	Stabilising, Directional, Disruptive
de Vries plant	de Vries ka Evening Primrose	Mutation theory from Oenothera

Human Health and Disease

Pathogens, antibodies and lymphoid organs.

Ratta Funda

Topic	Funda	Matlab
Ringworm fungi	M era T aaza E gg	Microsporum, Trichophyton, Epidermophyton
Antibody types	GAME khelo	IgG, IgA, IgM, IgE
Antibody jobs	A = A mma ka doodh (colostrum), G = G arbh (placenta), E = E k chheenk (allergy)	IgA in colostrum; IgG crosses placenta; IgE in allergy
Primary lymphoid organs	B ade T ree	Bone marrow, Thymus
Secondary lymphoid organs	S ab L og T iffin P e A ao	Spleen, Lymph nodes, Tonsils, Peyer's patches, Appendix
Malaria parasites	V ery M ild, F atal	P. vivax, P. malariae, P. falciparum (most serious)
Typhoid test	T yphoid = W idal (TW)	Widal test confirms typhoid
Drug sources	P oppy = H eroin, C annabis = G anja, C oca = C ocaine	Papaver somniferum, Cannabis sativa, Erythroxylum coca

Microbes in Human Welfare

Acids, medicines and biofertilisers.

Ratta Funda

Topic	Funda	Matlab
Organic acids	A cetic- A cetobacter, B utyric- b utylicum, L actic- L acto, C itric- N imbu-niger	Acetobacter aceti, Clostridium butylicum, Lactobacillus, Aspergillus niger
Bioactive molecules	S trepto → S treptokinase; T richo → T ransplant (cyclosporin); M onascus → M inus cholesterol (statins)	Clot buster; immunosuppressant; cholesterol lowering
Swiss cheese	P ropioni ke P hoool-se ched	Propionibacterium sharmanii makes the big holes
Sewage treatment	P ehle P hysical, S ecund S ajeev (biological)	Primary: physical; secondary: biological (flocs)
Biofertilisers	R aja A zad A aya, G aon C hala	Rhizobium, Azotobacter, Azospirillum, Glomus (mycorrhiza), Cyanobacteria
Biocontrol	L adybird- A phid, Bt - B utterfly caterpillar, T richoderma- F ungus	Ladybird eats aphids; Bt kills caterpillars; Trichoderma controls fungal pathogens

Biotechnology: Principles and Processes

PCR, EcoRI naming and cell wall enzymes.

Ratta Funda

Topic	Funda	Matlab
PCR steps	Dal Aloo Egg	Denaturation, Annealing, Extension
EcoRI name	E + co + R + I	Escherichia, coli, strain RY13, first enzyme found
EcoRI site	GAATTC = Gaana Aaj Achha, Tum To Chup	5'-GAATTC-3' palindrome
Breaking cell walls	Bacteria-Lysozyme, Plant-Cellulase, Fungus-Chitinase	Enzymes used to release DNA
Vector needs	Ori, Marker, Cloning site: "OMC"	Origin of replication, selectable marker, cloning site
Blue-white	White = Winner (recombinant)	Insert in lacZ: white colonies are recombinant

Biotechnology and its Applications

Bt genes and milestone years.

Ratta Funda

Topic	Funda	Matlab
cry genes	Cotton ko c wala bhi (IAc, IIAb); Corn ko sirf IAb	cryIAc, cryIIAb: cotton bollworms; cryIAb: corn borer
Milestone years	83 insulin, 90 gene therapy, 97 Rosie	Eli Lilly insulin 1983; ADA gene therapy 1990; Rosie cow 1997
Insulin chains	A aur B, S-S se joda	A and B chains joined by disulphide bridges
RNAi	Double Strand Silence: "DSS"	dsRNA silences specific mRNA (nematode-resistant tobacco)
Ethics body	GEAC = GM ka Ek Admin Committee	Genetic Engineering Appraisal Committee

Organisms and Populations

Interactions and age pyramids.

Ratta Funda

Topic	Funda	Matlab
Interactions	M ++, C --, P +-, Com +0, Am -0	Mutualism, competition, predation/parasitism, commensalism, amensalism
Age pyramids	Badhti = Triangle, Sthir = Bell, Ghatti = Urn	Expanding, stable, declining populations
Growth curves	J = Jaldi (exponential), S = Sabr (logistic)	J-shaped exponential; S-shaped logistic with carrying capacity K
Population change	BI badhaye, DE ghataye	Births and Immigration add; Deaths and Emigration subtract
Brood parasite	Koel ka Kawwa	Koel lays eggs in crow's nest

Ratta Funda

Topic	Funda	Matlab
Decomposition steps	F ir L alu C hai H i M aange	Fragmentation, Leaching, Catabolism, Humification, Mineralisation
Inverted pyramids	S ea ka B iomass, T ree ka N umber	Biomass pyramid inverted in sea; number pyramid inverted for a tree
Energy pyramid	E nergy E k-dum seedha (always upright)	Never inverted
10% law	L indeman = L aw of 10	10% energy passes to the next level
Productivity	G ross – R espiration = N et: " G – R = N "	GPP – R = NPP

Ratta Funda

Topic	Funda	Matlab
Evil quartet	H um O ffice A aj C hhodenge	Habitat loss, Over-exploitation, Alien species, Co-extinction
Recent extinctions	D adi Q uick T hali S ervo	Dodo (Mauritius), Quagga (Africa), Thylacine (Australia), Steller's sea cow (Russia)
Indian hotspots	W ah I ndia H ari-bhari	Western Ghats–Sri Lanka, Indo-Burma, Himalaya
Biodiversity levels	G ene, S pecies, E co: " GSE "	Genetic, species, ecological diversity
Alien invaders	N ile P erch L ake V ictoria khaa gaya	Nile perch wiped out cichlid fish in Lake Victoria
Conservation	In = I nside ghar (natural habitat), Ex = E xit (zoo, seed bank)	In situ vs ex situ

All the best for NEET!

Want the full chapters? **Road Maps in Biology for NEET (UG) and Class 11 and 12** by MTA Team covers the same 32 chapters with full road maps, process flowcharts, comparison tables and NEET traps:
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