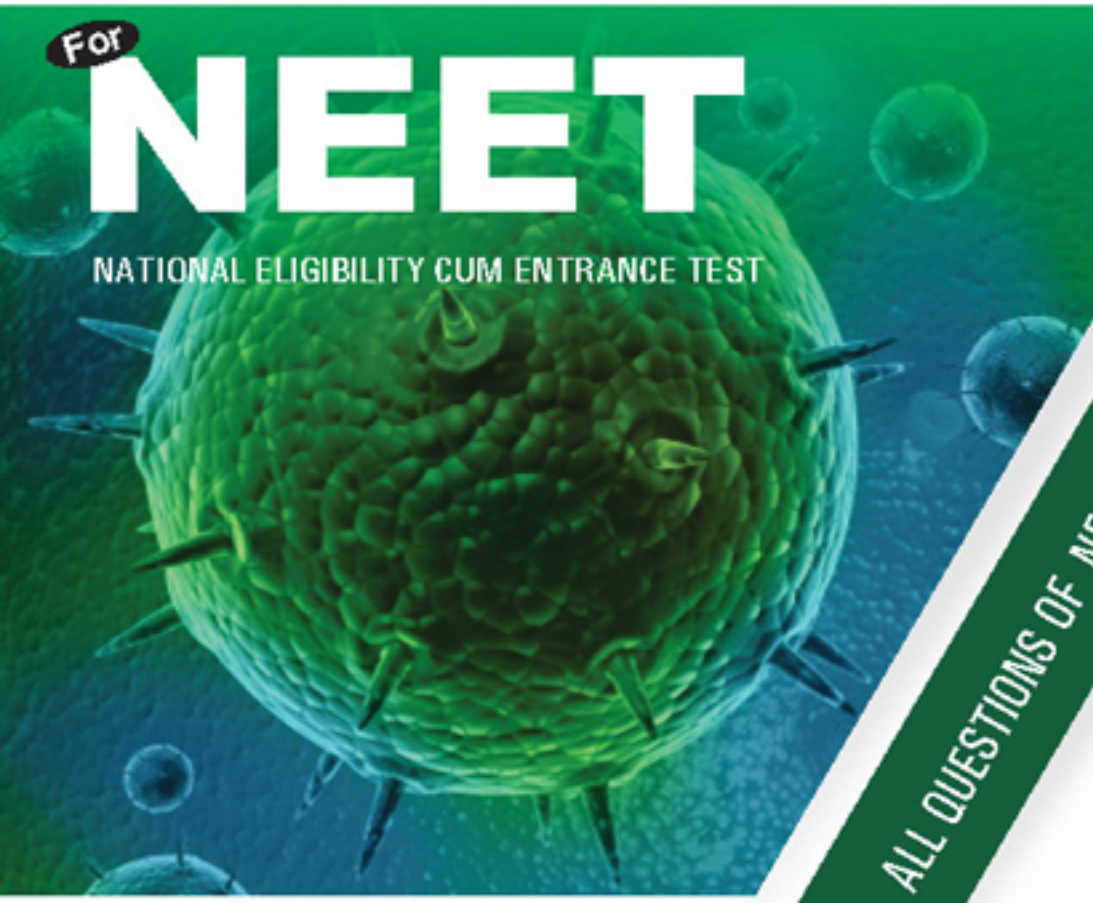
MODERN'S abc OF

Objective Biology

PART-I

For **NEET**

NATIONAL ELIGIBILITY CUM ENTRANCE TEST



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- Thought provoking questions
- Practice Papers for Self-Evaluation
- Mock Test Papers for Self-Assessment

V.K. Khosla
Kanta Khosla
O.P. Mehta

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NATIONAL ELIGIBILITY CUM ENTRANCE TEST

By

VIJAY K. KHOSLA
KANTA KHOSLA
O.P. MEHTA

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We are committed to serve students with best of our knowledge and resources. We have taken utmost care and attention while editing and printing this book but we would beg to state that Authors and Publishers should not be held responsible for unintentional mistakes that might have crept in. However, errors brought to our notice, shall be gratefully acknowledged and attended to.

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Preface

The presentation in your hands of revised and enlarged edition of **"Modern's abc of Objective Biology"** provides a complete review of the material covered in two years course in Biology at +2 stage.

This book has been thoroughly revised strictly in accordance with the changing trends of different examinations to fulfil the needs of the students aspiring for selection in different competitive examinations.

Feed Work

- Revision Notes provides complete but precise discussion of chapter. It ranges from elementary and basic concepts to advanced and sophisticated ones .
- **Key Facts.** These concepts and facts help the students to prepare the topic thoroughly.
- **In Focus** highlights the important points related to topic.
- **Quanta to Memory** are energy packets for memory and contain valuable information.
- **Flow Charts** and **Tables** will help the students to have a quick grasp of the wide range of topics.

Questions

- **Multiple Choice Questions.** These include a variety of objective type questions in the form of multiple choice questions. This part has been completely revised, restructured and enlarged.
- **NCERT Exemplar Problems** (MCQ) have been included.
- **Questions from Competitive Examinations.** Questions from all types of competitive examinations have been included under separate heading.
- Recently Asked Questions (RAQ) have been mentioned under special category. All these will enable the students to have quick revision.
- **'Thought Provoking Questions'** Self assessment Test at the end of each unit helps the students to assess the preparation of unit.
- **Practice Papers** at the end of each part.
- **'Five Mock Tests'** are very similar tests for complete revision of syllabus.

Answers

- The book provides answers to all questions.
- Special feature of the book is explanation of many questions along with answers at the end of each chapter.

Tips to Students

- Read this book in between the lines because a slight mistake in reading the statement may make a large difference in answer. In the competitive examination speed and accuracy are equally vital. Do not read the book like a novel, keep a pen or pencil ready, make sketches wherever necessary to understand the working.
- Do not take things for granted but consider all arguments for and against.
- Avoid the temptation to see the answer without trying all the responses (choices) yourself. Do not jump to conclusions.

Acknowledgements

It is very difficult to give the long list of friends, colleagues and dear students who have been helping in different ways during the revision of the book. We are gratefully indebted to them. We also acknowledge painstaking efforts of our students and children who helped us in the completion of this project.

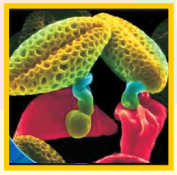
We acknowledge with thanks the untiring efforts of our publisher, **Mr. Balwant Sharma, (National Sales Head), Mr. Manik Juneja, National Head (Content Operations), Mr. S.K. Sikka (G.M. Publication), Mr. Ravinder Pathania, (G.M. Publication) and B.S. Rawat, Manager Publication** and efficient staff to bring out the book.

We hope the book Modern's abc of Objective Biology will be warmly received by the young scholars and give them a sense of excitement as well as analytical power. It gives an excellent guidance and induce confidence in them to face the challenges. **We Pray for their Success**.

Though sincere efforts have been made to ensure that all the answers are correct. A slip on our part or during printing cannot be ruled out. We ensure the students to eradicate these errors in the next edition.

Suggestions for improvement of the book will be sincerely and gratefully acknowledged.

Authors



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- **Explanation** *to most of the questions have been given at the end of each chapter along with answers.*
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- *Six Practice Papers*
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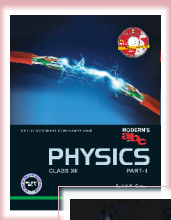
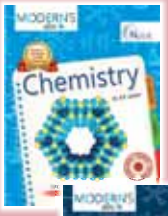


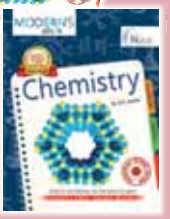
MODERN'S abc OF PHYSICS

The book presents the subject matter in full conformity with the syllabi prescribed by C.B.S.E., New Delhi and Education Boards of other Indian states. To keep pace with changing trends in education at national level, the whole text has been arranged strictly according to N.C.E.R.T. pattern. The main stress has been laid on SI. The symbols and signs used for various physical quantities are also in keeping with the recommendations at national and international levels.

The book provides a result-oriented training to young students. The whole text of the book is embedded with short notes in the form of **The jargon** (introducing apparently a new physical term with a proper definition), Key point (highlighting an important point in the text) and **Watch out** (bringing out the difference between the physical and apparent meaning of a physical term). Further, the text has been studded with simple **Self-Study Questions,** so as to provide an insight and a proper grip over the topic, as one learns it. The article work in each chapter of a unit is coupled with well graded and carefully selected **Solved Numerical Problems** for easy comprehension of the beginners. So that the students can prepare for the Annual Examinations in an independent manner, a large number of **Very Short Answer Questions** and **Short Answer Questions** have been incorporated in the book with proper Answers/Hints. **Unsolved Numerical Problems** for self-practice have been categorised into various types, so as to enable the students to choose the appropriate formula with ease. Further, detailed Hints/Solutions have been provided to Unsolved Numerical Problems. **Techie-Stuff** offers a special feature of the book. It contains real **Conceptual Numerical Problems** and **Conceptual Short Answer Questions.** It is aimed to provide intensive understanding and deep insight of the subject to the students, so that they get the feel of the type of questions asked in competitive examinations, such as I.I.T.

The Competitive Examination File in each unit forms another special feature of the book and consists of three parts. **Revision at a Glance** of the contents of a unit is for easy and handy reference of various physical laws, principles, terms and formulae in that unit and for its quick revision. **Numerical Problems from Competitive Examinations,** such as **I.I.T., Roorkee** and **I.S.M., Dhanbad** have been provided with solutions by adopting a novel technique in the form of **Thought Process.** Armed with this technique, the students will be able to attack the otherwise brainteasing and seemingly incomprehensible numerical problems with great ease. **Multiple Choice Questions** set in various competitive examinations, such as **C.B.S.E., A.I.I.M.S., A.F.M.C., M.N.R., C.P.M.T., I.I.T.,** etc have been thoroughly covered in the book. For the sake of easy preparation, these questions have been categorised into **Text-Based** and **Thought-Based** Multiple Choice Questions. The author is of the firm opinion that the learning is a continual and gradual process. With the Competitive Examination Files on different units at their disposal, the students would be able to master them steadily all through the academic year, while preparing for admission to professional courses.





MODERN'S abc OF + CHEMISTRY

ABOUT THE BOOK

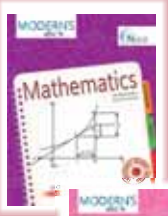
The book in your hands is strictly based upon the new syllabus prescribed by C.B.S.E., New Delhi and Educational Boards of Indian states. The book has been written according to N.C.E.R.T. pattern and keeping in view the changing trends of different examinations. The book has been number ONE among the teachers and the students all over India for its clear presentation, effective approach of solving numerical problems and attractive figures.

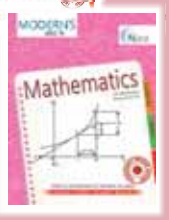
FEATURES OF THE BOOK

❖ Simple language and easily reproducible diagrams. ❖ Large variety of SOLVED NUMERICAL PROBLEMS. ❖ Additional numerical problems under the heading PRACTICE PROBLEMS for self assessment and practice. ❖ REVISION EXERCISES in the form : Very Short Answer Type, Short Answer Type and Long Answer Type Questions with HINTS and SOLUTIONS to some questions. ❖ CONCEPTUAL QUESTIONS solved at the end of each chapter. ❖ COMPETITION FILE covering additional information, graded numerical problems and objective questions to prepare for COMPETITIVE EXAMINATIONS for entrance to Medical and Engineering colleges. ❖ COMPLETE coverage of previous year questions from all types of Boards' examinations and competitive examinations such as I.I.T., Roorkee University, C.B.S.E. (PMT) and other State Boards.

In a NUTSHELL the book provides EXCELLENT GUIDANCE to students for Board's examinations as well as for competitive examinations for entrance to professional colleges.

A THOROUGH & SINCERE STUDY OF THE UNIQUE & UNMATCHED BOOK WILL BOOST THE STUDENTS TO ACHIEVE THEIR TARGET

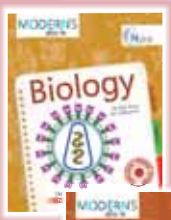


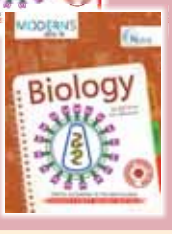


MODERN'S abc OF + MATHEMATICS

ABOUT THE BOOK

The book designed for Higher Secondary class fulfils the student's need for a basic study of the concepts, methods and logic of modern discrete Mathematics. Its subject matter is simple, up-to-date and in accordance with the changing trends of different examinations. Solved examples and unsolved problems have been selected very carefully and graded properly. Keeping in view the modern trend, the exercises have been divided into three groups viz. " Very Short Answer Type Questions", "Short Answer Type Questions" and "Long Answer Type Questions." Almost each unit is followed by "Competition Corner" in order to meet the requirements of those students who are to appear in various competitive examinations for admission in I.I.T., Roorkee and other Engineering colleges of the country.





MODERN'S abc OF + BIOLOGY

ABOUT THE BOOK

Modern's abc + of Biology has been written specially for students of XII under 10+2 system of education of CBSE and other Boards following NCERT pattern of Examination. Ever since the publication of the first edition, the book has been receiving the overwhelming response from teachers and taught alike. Keeping in view the recent edition of the book has been re-written as per latest syllabus. The book has been supplemented with practice problems and some interesting facts for competitive examinations at the end of each chapter. All the objective type questions and very short answer questions have been answered. Special attempt has been made to make the book useful for students preparing for competitive examinations for entrance to various medical Colleges. Superfluous details present the text material in most practical and original way.

With all these exclusive features, the book is bound to be the first choice of students all over India for Board and various competitive examinations.

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Important SYMBOLS & ABBREVIATIONS

A	– Androecium
A	– Adenine
ABA	– Abscisic acid
ATP	– Adenosine triphosphate
Aa	– Heterozygous dominant
AAAA	– Autotetraploid
AABB	– Allotetraploid
Å	– Angstrom (= 0.0001 of a micron)
ADP	– Adenosine diphosphate
ADA	– Adenosine deaminase
AIDS	– Acquired immuno deficiency syndrome
AMP	– Adenosine monophosphate
1 Atmosphere	= 76.00 cm of Hg = 1.01 x 10^5 Pa.
ANS	– Autonomic Nervous system
ACT	– Acoustic test facility
ACTH	– Adrenocorticotrophic hormone
BNHS	– Bombay Natural History Museum
5 Bro	– 5 Bromo uracil
Br	– Bracteate flower
ϕ	– Bacteriophage
BOD	– Biochemical oxygen demand
C	– Corolla
1 dyne	– 10^{-5} N
CDP	– Cytosine diphosphate
CTP	– Cytosine triphosphate
CT	– Calcitonin Hormone
Cyt	– Cytochrome
Cp	– Compare
CMP	– Cytosine monophosphate
CVA	– Cerebrovascular accident
CoA	– Coenzyme A
C	– Cystosine
COD	– Chemical Oxygen demand
CIFRI	– Central inland fisheries research institute
DNP	– Deoxyribo nucleoproteins
DPD	– Diffusion pressure deficit
DPT	– Diphtheria, Pertussis, Tetanus Vaccine
DNA	– Deoxyribose nucleic acid
DPN	– Diphosphopyridine nucleotide
EPR	– Electro paramagnetic resonance
ECG	– Electrocardiograph
EEG	– Electro encephalograph
Ebr	– Ebracteate
EMP	– Embden Meyerhof Parnas pathway
ELISA	– Enzyme linked Immuno Sorbant Assay
Epi	– Presence of epicalyx
ETS	– Energy transfer system
ER	– Endoplasmic reticulum
EM	– Electron microscope
FSH	– Follicle stimulating hormone
FAD	– Flavin adenine dinucleotide
FMN	– Flavin mono nucleotide
F_2	– Second filial generation.
$FADH_2$	– Flavin adenine dinucleotide (reduced)
F_1	– First filial generation.
GMP	– Guanosine monophosphate
GMF	– Genetically Modified Food
GMO	– Genetically modified Organisms
GA	– Gibberellic acid
G	– Guanine
GH	– Growth hormone
GTH	– Gonadotrophic hormone
HCLV–III	– Human cell leukaemia virus III
HIV	– Human immuno deficiency virus
ICSH	– Interstitial cells stimulating hormone
IAA	– Indole–3– acetic acid
ICRAF	– International council for research in Agroforest
IBA	– Indole–3–butyric acid
1 light year	– 9.46 × 10^{15} km
LSD	– Lysergic acid dimethylamide
LDH	– Lactate dehydrogenase
1 Newton	– 1 × 10^5 dynes
LH	– Luteinising hormone
mRNA	– Messenger Ribose Nucleic acid
1 microgram	– **10^{-6} gm**
1 microlitre (ml)	– 10^{-6} litre
1 Micrometre (mm)	– 10^{-6} m
MET	– Magneto–encephlography
MSH	– Melanocyte stimulating hormone
NMRI	– Nuclear Magnetic Resonance Imaging
NAD	– Nicotinamide adenine dinucleotide
$NADH_2$	– Nicotinamide adenine dinucleotide (reduced)
NAA	– Naphthalene acetic acid.
n	– Nanometre
OC	– Oral Contraceptive
OPV	– Oral Polio Vaccine
PEPA	– Phosphoenol pyruvic acid
Pstd	– Pistillode
PSII	– Pigment system II
PAN	– Peroxyacyl nitrate
PEM	– Protein energy malnutrition
PPi	– Inorganic Pyrophosphate
P	– Perianth

PGA	– Phosphoglyceric acid
PKU	– Phenylketonuria
PS-I	– Pigment system I
PIH	– Protein inhibiting hormone
PPLO	– Pleuro pneumonia-like organisms
RH	– Releasing hormone
RG	– Regulator gene
RPF	– Renal Plasma flow
RUBP (RUDP)	– Ribulose biphosphate
RUMP	– Ribulose monophosphate
RER	– Rough endoplasmic reticulum
RMP	– Ribulose monophosphate
RNA	– Ribose nucleic acid
RQ	– Respiratory quotient
SER	– Smooth endoplasmic reticulum
S	– Svedberg unit
SCID	– Severe combined immuno-deficiency syndrome
SQUID	– Superconducting Quantum interference device
STD	– Sexually transmitted diseases
TI	– Tumour inducing
TDP	– Thymidine triphosphate
TP	– Turgor pressure
tRNA	– Transfer ribose nucleic acid
TLC	– Total leucocyte count
T	– Thymine
TPN	– Triphosphopyridine nucleotide
TTP	– Thymidine triphosphate
TSH	– Thyroid stimulating hormone
TCA	– Tricarboxylic acid cycle
UMP	– Uridine monophosphate
UAG	– Nonsense Codon
U	– Uracil
UTP	– Uridine triphosphate
UV	– Ultravoilet
VNTR	– Variable Number Tendem Repeat
VD	– Venereal Diseases
WBC	– White Blood Corpuscle
ABP	– Androgen binding protein
ARF	– Acute Renal failure
BCOP	– Blood colloidal Osmotic pressure
CAT	– Computer assisted tomography
GE	– Gastroenterology
GIP	– Gastric Inhibitory peptide

Founders & Discoverers

Amino acid sequence of protein (insulin)	:	**Sanger**
Anaerobic release of energy (Yeast & Mould)	:	**L-Pasteur** (1878)
Bacteria	:	**Leeuwenhoek**
Pure culture of Bacteria	:	**Lister J.**
Bacteriophage	:	**Towrt and De Herelle** (1915)
Blood Capillaries	:	**Marcello Malpighi**
Blood Groups	:	**Karl Landsteiner**
Blood Circulation	:	**William Harvey**
Bioluminescence	:	**E.R. Dubois**
Biocatalysts	:	**Buchner**
Cyanophage	:	**Saffermann and Morris**
First description of cell (RBC)	:	**Jan Swammerdam** (1658)
Cell and Organelles		
Cell	:	**Robert Hooke** (1665)
Living cell	:	**A.V. Leeuwenhoek**
Cell Theory	:	**Schleiden and Schwann**
Centrosome	:	**Van Benden**
Centriole	:	**Van Benden**
Chromosomes	:	**Hofmeister**
Golgi bodies	:	**Camillo Golgi**
Plastids	:	**Haeckel (1866)**
Chloroplast	:	**Schimper**
Mitochondria	:	**Kolliker (1880)**
Microtubules	:	**Robertis and Francis**
Microfilaments	:	**Paleviz** et. al (1975)
Nucleus	:	**Robert Brown**
Nucleolus	:	**Fontana**
Nucleoplasm	:	**Strasburger**

Ribosomes (Animal cell)	:	**Palade**
Sphaerosome	:	**Pernes (1953)**
Astral rays and spindle	:	**Beevers**
Endoplasmic reticulum	:	**Porter**
Central Dogma	:	**F.H.C. Crick (1918)**
Coenzyme A	:	**C. Lipmann**
Chlorophyll structure	:	**Willstartter and Fisher**
Cyclosis	:	**Amici**
Cytochrome	:	**C.A. Macmunn (1886)**
Citric Acid cycle	:	**Hans A. Krebs**
Double Helical Structure of DNA	:	**Watson and Crick**
Biological Synthesis of DNA with template	:	**A. Kornberg**
Biological synthesis of DNA without template	:	**H.G. Khorana**
Enzyme	:	**Buchner**
Embryo culture	:	**Laiback**
Extra embryonic membranes	:	**Von Baer**
Fertilization in plants	:	**E. Strasburger**
Double fertilization	:	**Nawaschin**
G_o phase	:	**Lajtha**
Gaseous exchange in blood	:	**Ludwig (1872)**
Genetic defects in human	:	**Sir Archibald Garrod**
Giant Salivary gland chromosomes	:	**Balbiani (1881)**
Hormones	:	**Beylis and Starling**
Heterothallism	:	**Blackslee**
Interferon	:	**Issacs and Linderman**
Insulin use for treatment of diabetics	:	**Banting**
Mendelism	:	**G. Mendel**
Rediscoverer of Mendelism	:	**Correns, Hugo de Vries and Tschermak**
Microtome	:	**W. His**
Micro-organisms	:	**Leeuwenhoek**
Mitosis	:	**W. Flemming**
Meiosis	:	**Farmer and Moore**
Mutations	:	**Hugo de Vries**
Nucleic acid	:	**Mieshcher called it 'Nuclein'**
Ovum (Mammalian)	:	**Karl E. Von Baer**
Omnis cellula e cellula		**R. Virchow**
Pinocytosis	:	**Edward and Lewis**
Phagocytosis	:	**Metchnikoff**
Penicillin	:	**Alexander Flemming**
Plasmodesmata	:	**Strasburger**
Photorespiration	:	**Garner and Allard**
Quantosome	:	**Park and Bigginis (1960)**
Quiescent centre	:	**Clowes**
Protoplasm Physical basis of life	:	**Huxley**
Streptomycin	:	**Salmon Waksman**

Techniques

Chromatograph	:	**M.Tswett**
Tissue culture	:	**A. Carrel**
Isotopic tracing	:	**G. Havesy**
Measuring gaseous exchange manometry	:	**O. Warburg**
Locating DNA in cell	:	**A. Feulgen**
Ultracentrifugation	:	**T. Svedberg**
Avena curvature test	:	**Went**
Teminism (Reverse Transcription)	:	**Temin**
Synthesis of urea	:	**Wohler**
Virus	:	**D. Iwanovsky**
Obtained crystals of virus	:	**Stanley**

FIRST COINED OR USED TERM

Autoecology : Schroeter and Krichmer
Biology : Lamarck
Bacteria : Ehrenberg
Bioecology : Shelford and Clements
Cell organelles and cell division.
Cell : Robert Hooke (In Cork)
Cell wall : Robert Hooke
Cell membrane : Nageli and Cramer (1855)
Plasmalemma : Plowe (1931)
Protoplasm : J.E. Purkinje in animal cell **Von Mohl** in plant cell
: **Dujardin** named Sarcode to protoplasm
Cytoplasm and Nucleoplasm : Strasburger
Mitochondria : Benda (1897)
Chloroplast : Schimper
Mitochondria : Kolliker
Plastid : Haeckel
Golgi body : Camillo Golgi (After Golgi)
Lysosome : Christain de Duve
Ribosome : Claude and Palade
Endoplasmic reticulum : Porter
Nucleus : Robert Brown
Centriole : Van Beneden (1880)
Chromosome : W. Waldeyer 1888
Polytene Chromosome : Balbiani
Lampbrush Chromosome : Ruckert
Chromonema : Veidovsky (1812)
Nucleic Acid : Altmann
Chlorophyll : Pelletier and Caventor
Periplast : Altmann
Mitosis : W. Flemming (1882)
Meiosis : Farmer and Moore
Unit Membrane : Robertson (1956)
Prophase : Strasburger
Metaphase : Strasburger
Anaphase : Strasburger
Telophase : Strasburger
Coacervates : Oparin
Ecology : Reichter 1885; First Haeckel (1886)
Ecosystem : Richter (1888) Credit Tansley
Enzyme : Kuhne
Genetics : William Bateson
Gene : Johannson (1909)
Histology : Mayer
Hormone : Starling (1906)
Microspheres : Sydney Fox
Origin of Species : Charles Darwin
Physiology : Jean Fernet
Protein : Berzelius (1838)
Respiration : Dutrochet
Secretion : Baylis and Starling
Survival of Fittest : Herbert Spencer
Use and disuse of organs : John Lamarck
Vitamin : Funk

Taxonomy related TERMS

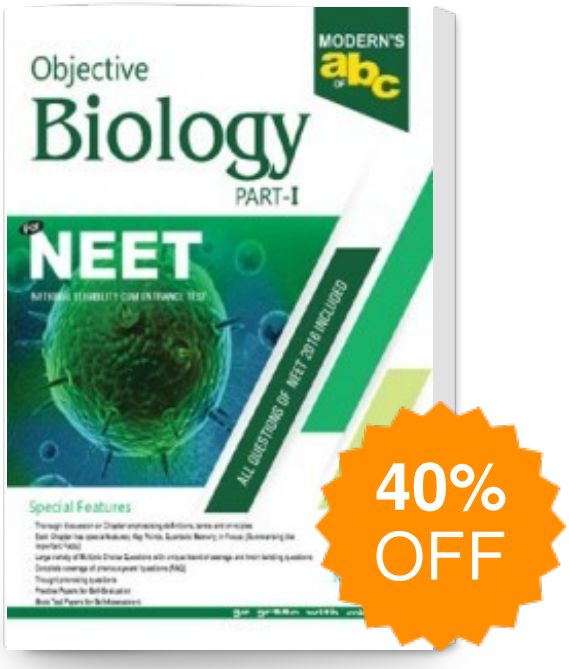
Virus : Beijerink
Protozoa : Gold Fuss
Porifera : Robert Grant
Parazoa : Solas
Coelenterata : Leukart
Mollusca : Johnston
Annelida : Lamarck
Arthropoda : Von Shield
Echinodermata : Jacob Klein
Cnidaria : Hatscheck
Entamoeba : Lamble
Vertebrata : Lamarck
Synecology : Schroeter and Kirchmer
Systematics : **C. Linnaeus**
Taxonomy : **Candolla**
New Systematics : **Julian Huxley**
Genera : **John Ray**
Species : **John Ray**
Phylogeny : **Lamarck and concept was established by Haeckel.**
Phylum : **Cuvier**
Sub-Phylum : **Cuvier**
Chordata : **Lamarck**
Class : **Linnaeus**
Order : **Linnaeus**
Family : **John Ray**
Monera : **Doughtery and Allen (1960)**
Prokaryota and Eukaryota : **Folt (1950)**
Prokaryota and Eukaryota : **Stanier and Van Neil (1962)**
Fungus : **Gaspard Bauhin (1560-1624)**

- **Most Intelligent Homonid** – Man (*Homo sapiens*)
- **Second Most Intelligent Mammal** – Dolphin
- **Most Intelligent ape** – Chimpanzee
- **Heaviest bony fish** – *Pangarianodon*
- **Heaviest crab** – *Pseudocarsinus*
- **Loudest arthropod** – Male cicada
- **Hibernating Mammal** – Bat, Squirrel,
- **Hibernating bird** – Poor will
- **Fish with four eyes** – *Ambleps*
- **Living fossil arthropod** – *Limulus*
- **Living fossil fish** – *Latimaria*
- **Living fossil reptile** – *Sphenodon*
- **Longest distance flying birds** – *Stemaparadisaea* (Arctic tern) it covers 22,530 kms during migration.
- **Heaviest Bird of Prey** – *Vulture gryphus.*
- **Fastest swimmer bird** – *Pygoscellus papua* (gento penguin)
- **Largest egg bird** – *Struthio camelus* (175 mm length, capacity)
- **Smallest egg bird** – *Mellisuga minima* (humming bird).
- **National Bird** – *Pavo cristatus* (Peacock).
- **National Animal** – Tiger
- **National Animal of Australia** – Kangaroo
- **National Animal of Newzealand** – Kiwi
- **Sharpest Memory** – Elephant
- **Ship of Desert** – Camel
- **Horse of river** – Hippopotanmus
- **Tree rat** – Vendiluria live in nest of bird
- **Blood sucking bat** – Vampire bat
- **Most powerful Electric fish** – Electrophorous electrius (370–500 volts)
- **Light producing fish** (bioluminescence) – Photoble, Phaaron, Malacocephalus etc.
- **Sound producing fish** – Malapterurus, Tetradon etc.
- **Highest Flier Bird** – *Cygnus* cygnus – Swan Height 27,000 feet.
- **Largest sea bird** – *Diomedia epomorphora* (wing stretch 80–125 inches)
- **Deepest Diver bird** – *Apteno dytes forsteri* (Emperor Penguin)
- **Most air borne bird** (Common swift) – *Apus apus* – 9 months in air in a year.

Smallest

Smallest Mammal – Shrew
Smallest Bird – Humming bird of cuba (5.5 cm)
Smallest ape – Gibbon
Smallest bone – Stapes
Smallest Cranial Nerve – Abducens
Smallest R.B.C. – Musk Deer (2.5 μm)
Smallest primate - Lemur
Smallest snake – *Lepto typhlops*
Smallest Salamandra – *Desmograthus*
Smallest freshwater fish – Pandaka
Smallest marine fish – Goby fish 8–10 mm in length
Smallest Insect – Mymer
Smallest Protozoan – Baberia
Smallest Muscle – Arrector pilli or stapedius muscle
Smallest Annelid – Chaetogaster
Smallest virus – Foot mouth virus of cattle 20 micron (μ)
Smallest Phylum – Porifera
Smallest class – Amphibia
Smallest cell – Squamulla
Smallest bacteria – Dialister 2 μ

Moderns ABC Of Objective Biology-NEET Part-1



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