

## Entry Test Scheme of Studies NMDCAT CRASH PROGRAMME (2021)

### NAME OF TOPICS (According to PMC)

TEST & DISCUSSION	BIOLOGY	CHEMISTRY	ENGLISH	PHYSICS	REASONING
Test - 1	Coordination and control/nervous & chemical coordination i. Nervous system <ul style="list-style-type: none"> <li>Nerve impulse</li> <li>Steps involved in nervous coordination</li> <li>Neurons (Structure and Types)</li> </ul> ii. Transmission of action potential between cells–synapse <ul style="list-style-type: none"> <li>Electrical synapses</li> <li>Chemical synapses</li> <li>Transmission of nerve impulse across synapse</li> </ul> vi. Reflexes and reflex arc vii. Levels of the spinal cord and its main functions viii. Parts of the brain with their main functions	Fundamental Principles of Organic Chemistry	Subject Verb Agreement	Unit # 6 (a) Electrostatics Learning Outcomes: Coulomb's Law, Electric Field Strength, Electric Potential & Electric field as Potential Gradient, Electric field lines, Electric field intensity due to an infinite sheet of charge and between two oppositely charged parallel plates	Classification of numbers, basic algebraic rules, fractions, HCF, LCM (logical problems)
Test - 2	Coordination and control/nervous & chemical coordination iii. Hormones iv. Endocrine glands v. Feedback mechanism <ul style="list-style-type: none"> <li>Positive feedback mechanism</li> <li>Negative feedback mechanism</li> </ul>	Chemistry of Hydrocarbons	<b>VERB</b> Causative, Subjunctive, Infinitive , bare infinitive Infinitive vs Gerund, inversion conjugation of Verb(Transitive vs Intransitive, weak vs strong)	Unit # 6 (b) Electrostatics Learning Outcomes: Capacitor, Capacitance of a capacitor and its unit, Capacitance of a parallel plate capacitor, Energy Stored in a Capacitor, Charging and Discharging a Capacitor, Polarization of dielectric of a capacitor.	Logical problems
Test - 3	Reproduction i. Male reproductive system ii. Female reproductive system (including menstrual cycle) iii. Sexually transmitted diseases	Alkyl Halides	Vocabulary (1 - 100) + Homophone (A - D) + Synonym in Context	Unit # 7 (a) Current Electricity Learning outcomes: OHM's Law, Electrical resistance, Specific resistance of resistivity, Effect of temperature on resistance, Temperature coefficient of resistance, Variation of resistivity with temperature, Concept of steady current.	Rates, proportion, mean, percentage (Logical problems)
Test - 4	Support and Movement i. Cartilage ii. Types of muscles <ul style="list-style-type: none"> <li>Skeletal muscles</li> <li>Cardiac muscles</li> <li>Smooth muscles</li> </ul> i. Structure of skeletal muscles ii. Mechanism of skeletal muscle contraction iii. Types of joints iv. Gout and arthritis	Alcohols and phenols	Tenses + Sequence of Tenses + Conditionals	Unit # 7 (b) Current Electricity Learning outcomes: Internal resistance of a supply, Electric power, Unit of electric power, Kilowatt-hours	Cause & effect

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Test - 5	<b>Evolution</b> i. Concepts of evolution ii. Inheritance of acquired characteristics iii. Darwinism iv. Darwin's theory evolution v. Neo-Darwinism's vi. Evidence of evolution	Adehydes and ketones	Phrasal Verbs	<b>Unit # 8 Electromagnetism</b> <b>Learning outcomes:</b> Magnetic field. Magnetic flux, Magnetic flux density, force acting on a charged particle in a uniform magnetic field.	Angles, triangles, common geometrical shapes, Mensurations
Test - 6	<b>Variation and Genetics / Inheritance</b> i. Mendel's law of inheritance <ul style="list-style-type: none"> <li>Gregor John Mendel and his work</li> <li>Mendel's experiment</li> <li>Inheritance of single trait</li> <li>Mendel's principles of inheritance</li> <li>Inheritance of two traits</li> <li>Law of independent assortment</li> <li>Scope of independent assortment in variation</li> <li>Statistics and probability relevant to genetics</li> </ul> ii. Multiple alleles	Carboxylic acids and Macromolecules	Vocabulary (101 - 200) + Homophone (E - I) + Synonym in Context	<b>Unit # 9 (a) Electromagnetic Induction &amp; Electronics</b> <b>Learning outcomes:</b> Electromagnetic induction, Faraday's Law, Lenz's Law, Lenz's Law and conservation of energy, Generating electricity - Alternating Current Generator	Course of action
Test - 7	<b>Variation and Genetics / Inheritance</b> iii. Gene linkages and crossing over iv. Sex linkages in drosophila v. Sex linkage in human <ul style="list-style-type: none"> <li>Genetics of hemophilia</li> </ul>	Groups (s and p block elements)	Preposition	<b>Unit # 9 (b) Electromagnetic Induction &amp; Electronics</b> <b>Learning outcomes:</b> Transformers, construction of a transformer, step-up and step-down transformer, half and full wave rectifications	Ranking, counting, probability, days counting
Test - 8	<b>Cell structure and function</b> iv. Fluid mosaic model i. Cell wall ii. Cytoplasm and cell organelles <ul style="list-style-type: none"> <li>Endoplasmic reticulum</li> <li>Golgi apparatus/golgi complex /golgi bodies</li> </ul>	Periods (s and p block elements)	Conjunction + Faulty Coordination	<b>Unit # 10 Dawn of Modern Physics</b> <b>Learning outcomes:</b> Particle model of light in terms of photons with particular energy	Analogy
Test - 9	<b>Cell structure and function</b> <ul style="list-style-type: none"> <li>Nucleus</li> <li>Mitochondria</li> <li>Lysosomes</li> <li>Plastids/chloroplasts</li> <li>Vacuoles</li> </ul> iii. Prokaryote and eukaryote Cumulative (Test # 1 to 9)	Transition elements FLP (Test # 1 to 9)	Subject Verb Agreement Verbs Tenses Phrasal Verbs Preposition Conjunction + Faulty Coordination Vocabulary + Homophone (A - O) + Synonym in Context + Vocabulary (1 - 300)	<b>Cumulative from Unit # 6-11</b> <b>Learning Outcomes:</b> Electrostatics, Current Electricity, Electromagnetism, Electromagnetic Induction & Electronics, Dawn of Modern Physics, Atomic Spectra	Number sequence + odd numbers + number diagrams
Test - 10	<b>Biological molecules</b> i. Introduction to biological molecules ii. Water iii. Carbohydrates iv. Proteins v. Lipids vi. Conjugated molecules (glycolipids, glycoproteins)	Introduction to fundamental concepts of chemistry	Articles + Noun	<b>Unit # 12 (a) Nuclear Physics</b> <b>Learning outcomes:</b> Spontaneous and random nuclear decay / the law of Radioactive decay, Half life and rate of decay, Describe a simple model for the atom to include protons, neutrons and electrons.	Statement & Assumption

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Test - 11	<b>Enzymes</b> i. Introduction/characteristics of enzymes ii. Mechanism of action of enzymes iii. Factors effecting rate of enzyme action iv. Enzyme inhibition	Atomic structure	Grammer General Rule, Modifier + Peronoun	Unit # 12 (b) Nuclear Physics <b>Learning outcomes:</b> Biological effects of Radiation, Biological and Medical uses of Radiation	Alphabetic series + (Level 1)
Test - 12	<b>Bioenergetics</b> i. Anaerobic respiration (respiration without oxygen) ii. Electron transport chain iii. Glycolysis/glycolytic pathway/aerobic respiration iv. Light dependent and light independent phases/reactions, v. Oxidative phosphorylation /cyclic and non- cyclic phosphorylation, vi. Photosynthesis, vii. Production of ATP, viii. Role of light, water, CO2, factors effecting photosynthesis	Gases	Vocabulary (301 - 400)+ Homophone (P - T) + Synonym in Context	Unit # 1 (a) Force and Motion <b>Learning outcomes:</b> Displacement, Velocity, Displacement-time graph, Acceleration, Uniform acceleration, Variable acceleration, Graphical representation of acceleration with velocity time graph, Newton's laws of motion	Statement &Argument
Test - 13	<b>Biodiversity (acellular life/variety of life)</b> i. Classification of viruses ii. Discovery of viruses iii. Structure of viruses iv. Viral disease (for example AIDS)	Liquids and Solids	Punctuation	Unit # 1 (b) Force and Motion <b>Learning outcomes:</b> Linear Momentum, Law of conservation of momentum, Collision, Elastic collision, Elastic collision in one dimension, elastic collision in one dimension under different cases, projectile motion, characteristics of projectile motion	Alphabetic series (Level 2)
Test - 14	<b>Prokaryotes (Kingdom Monera)</b> i. Cellular Structure of bacteria ii. Shape and size of bacteria iii. Importance and control of bacteria	Chemical equilibrium	Fregment + Clause, Type of sentence run on Comma Splice	Unit # 2 Work and energy <b>Learning outcomes:</b> Work, Energy, Kinetic energy, Potential energy, Gravitational potential energy, Power,Difference between P.E and gravitational P.E, Implications of energy losses in practical devices, Workdone against friction is dissipated as heat in the environment	Statement & Conclusion
Test - 15	<b>Diversity among Animals (The Kingdom Animalia)</b> i. Characteristics and diversity among the animals (animal phyla, characteristics)	Reaction kinetics	Vocabulary (401 - 500) + Homophone (U - Z) + Synonym in Context	Unit # 3 Rotational and Circular Motion <b>Learning outcomes:</b> Angular displacement, Revolution, Degree, Radian, Angular Velocity, Relation between linear and angular variables, Relation between linear and angular displacements, Relation between linear and angular velocities, Relation between linear and angular accelearrations, Centripetal force	Logical deductions
Test - 16	<b>Life process in animals and plants (nutrition/gaseous exchange/ transport)</b> i. Carnivorous plants/parasitic nutrition (pitcher plant, venus fly trap, sundew) ii. Water and mineral uptake by roots, xylem and phloem iii. Osmotic pressure/potential v. Respiratory system	Thermo-chemistry and energetics of chemical reactions	Reading Comprehension	Unit # 4 (a) Waves <b>Learning outcomes:</b> Progressive waves, Types of progressive , Periodic waves, Speed of sound in air, factors on which speed of sound in air depends, Principle of superposition / superposition of sound waves, Interference of sound waves	Critical reasoning
Test - 17	<b>Life process in animals and plants (nutrition/gaseous exchange/ transport)</b> vi. Digestive system	Electrochemistry	Reading Comprehension	Unit # 4 (b) Waves <b>Learning outcomes:</b> Stationary waves, Stationary waves in a stretched string, Stationary waves in vibrating air columns, Doppler effect, Simple harmonic motion, Characteristics of simple harmonic motion	Will come later

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Test - 18	Life process in animals and plants (nutrition/gaseous exchange/ transport) iv. Cardiovascular system (including human heart structure, blood vessels) vii. Immune & system viii. Lymphatic system Cumulative (Test # 10 to 18)	Chemical bonding FLP (Test # 10 to 18)	Article + Noun Grammar General Rule, Modifier + Peronoun Punctuation Fregment + Clause, Type of Sentence, run on comma splice Reading Comprehension Vocabulary + Homophone (P - Z) + Synonym in Context + Vocabulary (301 - 500)	Cumulative from Unit # 1-5 & 12 Learning Outcomes: Force and Motion, Work and energy, Rotational and Circular Motion, Waves, Thermodynamics, Nuclear Physics	Will come later