

FRC – Science and Technology Schedule | January 18 – January 24

Date/Day	Lecture #	Topics
18-Jan-2024 Thursday	Test 1 7AM - 8AM	SnT - UPSC Previous Year Questions (PYQs)
18-Dec-2024 Thursday	Lecture #1 8:45 AM – 1:00 PM 2:30 PM – 5:30 PM	<p>Space – Big Bang Theory; Lifecycle of Star - Nebula, Star formation; White Dwarf, Supernova, Neutron Star, Black hole; Sun: Layers of Sun, Solar flare, CME, Solar System – Kuiper belt, Oort Cloud Gravitational Waves – LIGO, INDIGO, eLISA</p> <p>Satellite Launch Systems – Solid Fuel; Liquid Fuel; Cryogenic Fuel; PSLV; GSLV; Satellites – Resource Mapping; Communication; Navigation - NAVIC Space Exploration - JWST, ASTROSAT, Aditya L1</p> <p>Information Technology – Mobile; Evolution of mobile technology- 1G, 2G, 2.5G, 3G, 4G, 5G, 5G: Massive MIMO, Beamforming,</p>
19-Jan-2024 Friday	Test 2 7AM - 8AM	Syllabus: Topics of Lecture #1
19-Jan-2024 Friday	Lecture #2 8:45 AM – 1:00 PM 2:30 PM – 5:30 PM	<p>Computer Technologies – Supercomputer; AI: Machine Learning, Deep learning, Generative AI Block Chain – Nodes, Mining, Cryptocurrency; NFT Quantum Computing – QUBIT; Superposition; Entanglement; Tunnelling</p> <p>Basic Physics: Light, Phenomenon associated with light – diffraction, scattering, bending etc.; Sound; Fuel Cell</p> <p>Nuclear – Types of nuclear reaction- Fission and fusion; Fission reaction; fertile material; Fissile material, transmutation, fuel rods, control rods; 3 stage nuclear program of India, Nuclear fusion – natural and artificial, Magnetic confinement fusion, Tokamak, ITER,</p> <p>Defence – Types of missiles: Cruise, Ballistic; Type of missile engines: Ramjet, Scramjet; IGMDP: Prithvi, Agni Air defence, Ballistic missile defence; Artillery, Rocket Systems; p75, p75i, Air independent propulsion submarines; Drones- UAV, Rustom, Ghatik</p>
20-Jan-2024 Saturday	No Class / Revision Break	

21-Jan-2024 Sunday	Test 3 7AM – 8AM	Syllabus: Topics of Lecture #2
21-Jan-2024 Sunday	Lecture #3 8:45 AM – 1:00 PM 2:30 PM – 5:30 PM	<p>Biology</p> <p>Fats: Triglycerides, Saturated vs unsaturated fatty acids, Unsaturated fatty acid - Cis and Trans-fat; Trans-fat - Regulation, Impact.</p> <p>WHO and India's initiative for elimination of trans fat, Protein and its functions</p> <p>Vitamins, deficiencies, diseases, nutrition</p> <p>Microorganisms – utilities – biofuels</p> <p>Genetics</p> <p>Hereditary disorders</p> <p>Gene Editing and its applications; Bacteria, Virus; Recombinant DNA; Gene expression; Process of protein formation; RNA and its types--> mRNA, tRNA, rRNA, Steps in protein formation: Transcription, Translation, Folding</p>
22-Jan-2024 Monday	Test 4 7AM - 8AM	Syllabus: Topics of Lecture #3
22-Jan-2024 Monday	Lecture #4 8:45 AM – 1:00 PM 2:30 PM – 5:30 PM	<p>Biotechnology->Transcription, Transcriptome, Translation; Recombinant DNA; Gene Editing, Plasmid, CRISPR Cas9, Guided RNA, Cas9 enzyme, Stem cells, Pluripotent cell, Totipotent, Multipotent, Somatic cell nuclear transfer/Cloning, Gene therapy; Germ-line editing; 3 parent baby/Designer baby, three parent baby-Pronuclear transfer, mitochondrial spindle therapy,</p> <p>Virus - Virus, Immunity- Acquired immunity-B-cell, Plasma and Memory cell, T-cell- helper cell and Killer cells; Antigen-Antibodies</p> <p>Immunity –Types of Acquired immunity, Innate immunity, Active immunity, Passive immunity, Vaccine – How do they work, Types of vaccine-Live attenuated vaccine, Inactivated viral vaccine, Sub-unit vaccine, mRNA vaccine, Nano-lipids, herd immunity,</p>
23-Jan-2024 Tuesday	No Class / Revision Break	
24-Jan-2024 Wednesday	FLT 4:00 PM – 6:00 PM	SnT - Full Length Test
24-Jan-2024 Wednesday	FLT Discussion 6:15 PM – 7:15 PM	SnT - Full Length Test Discussion

