MTech in Data Science and AI
Entrance Exam Syllabus
(Online Entrance Exam) For Academic Year 2024-2025

Section A: General Aptitude

Quantitative Aptitude: Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Analytical Aptitude: Logic: deduction and induction Analogy, Numerical relations and reasoning and Spatial Aptitude: Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 dimensions

Section B:

Part-1: Mathematics and Statistics

Probability, Random experiment, outcomes, and associated sample space, events, mutually exclusive and exhaustive events, impossible and certain events. Union and Intersection of events. Complementary, elementary, and composite events. Definition of probability—classical and statistical—examples. Elementary theorems on probability—simple problems. Conditional probability, Bayes' theorem—simple problems. Random variable as function on a sample space. Binomial distribution, examples of random experiments giving rise to Binomial distribution.

Part-2: Computational Methods

Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, graphs, searching, sorting.

Networking, Internet, World Wide Web, web servers, web clients, web sites, web pages, web browsers, blogs, newsgroups, HTML, web address, e-mail address, downloading and uploading files from a remote site. Internet protocols: TCP/IP, SMTP, POP3, HTTP, HTTPS. Remote login and file transfer protocols: SSH, SFTP, FTP, SCP, TELNET, SMTP, TCP/IP. HTML, Introduction to web page designing using HTML: create and save an HTML document, access a web page using a web browser. HTML tags: html, head, title, body, (attributes: text, background, bgcolor, link, vlink, alink), br (break), hr (horizontal rule), inserting comments, h1..h6 (heading), p (paragraph), b (bold), i

(italics), u (underline), ul (unordered list), ol (ordered list), and li (list item). Description lists: dl, dt and dd. Attributes of ol (start, type), ul (type).

Part-3: Science

Physical Properties and States of Matter, Modes of transference of Heat, Mass, Weight, Volume, Sound waves and their properties, Simple musical instruments, Rectilinear propagation of Light, Density and Specific Gravity, Reflection and refraction, Principle of Archimedes, Spherical mirrors and Lenses, Pressure Barometer, Human Eye, Motion of objects, Natural and Artificial Magnets, Velocity and Acceleration, Properties of a Magnet, Newton's Laws of Motion, Earth as a Magnet, Force and Momentum, Static and Current Electricity, Parallelogram of Forces, Conductors and Non-conductors, Stability and Equilibrium of bodies, Ohm's Law, Gravitation, Simple Electrical Circuits, Elementary ideas of work, Heating, Lighting, Preparation and Properties of Hydrogen, Oxygen, Nitrogen and Carbon Dioxide, Oxidation and Reduction, Acids, bases and salts, Carbon—different forms, Physical and Chemical Changes, Fertilizers—Natural and Artificial, Elements, Mixtures and Compounds, Elementary ideas about the structure of Atom, Symbols, Valency Properties of Air and Water.