

TS.Ed.CET-2021
SYLLABUS
MATHEMATICS
(Up to 10 class – Telangana State curriculum)

1. Number System:

Fundamental operations (+, −, ×, ÷, squares, square roots, cubes, cuberoots) and properties of different number systems up to Real Numbers- properties of numbers like even, odd, prime, composite, co-prime, multiples, factors etc. - prime factorization, LCM and HCF of numbers- number patterns-progressions(arithmetic progression) – Playing with numbers(divisibility rules, number puzzles) – fractions and decimals and their conversions with and without division- laws of logarithms- Mathematical units and their conversions.

Sets and their representation – types of sets – operations on sets – Venn diagrams

2. Commercial Mathematics:

Ratio – inverse ratio, compound ratio - Proportion (direct and indirect) – unitary method – percentage – conversion from fraction, decimal to percentage and vice-versa- profit and loss- discount – Interest (simple and compound) – Time and distance – Time and work – Goods and Service Tax(GST)

3. Algebra:

Variables and constants, terms, expressions, degree – types of expressions (based on degree and terms)

Operations on Algebraic expressions-laws and properties of exponents – factorization– algebraic Identities- polynomials and their zeroes – remainder theorem and factor theorem – relationship between zeroes and coefficients of polynomials

Simple linear equations (in one variable and two variables) – pair of linear equations in two variables (conditions for consistent, inconsistent and dependent and their geometrical interpretations) and their solutions – Quadratic equations (nature of roots) and finding the roots and forming a quadratic equation when roots are given.

4. Geometry:

Basic geometric ideas (point, line, plane etc) – Angles (types of angles)

Lines and angles – pairs of angles (complementary, supplementary etc) vertically opposite angles, linear pair- parallel lines and a transversal, different angles formed and properties related to them

Types of triangles (based on sides and angles) and their properties-triangle inequalities – congruency and similarity of triangles and their criterion- basic proportionality theorem and converse-Pythagoras theorem and converse – areas of similar triangles

Different types of quadrilaterals (trapezium, parallelogram etc.) and their properties – mid-point theorem and its converse.

Parts of a circle – different angles formed by an arc (chord) – perimeter and area of a sector – segments of a circle – tangents and secants to a circle and their properties.

Cartesian system- plotting a point- distance between two points – section formula (mid-point, centroid etc) – area of triangle – collinearity-slope of a line

5. Mensuration

Perimeter and area of plane figures (triangle, circle etc) – surface areas and volumes of different solid figures (cube, cylinder, etc)

6. Trigonometry

Trigonometric ratios – values for specific angles ($0^\circ, 30^\circ, 45^\circ, 60^\circ, 90^\circ$)-complementary angles – trigonometric identities – angle of elevation and depression and simple problems related to them.

7. Data Handling

Collection, classification and types of data – tabular forms – graphical representation of data (pictogram, bar graph etc) – reading and interpretation of data from graphs – mean, median and mode of ungrouped data – simple problems related to probability (dice, coins, deck of cards etc)-concept of complementary events.

SCIENCE (Physical Science & Biological Science) (Up to 10 class – Telangana State curriculum)

1. Food

Food from plants and animals –methods of preparing food- food preservation methods- food components- Carbohydrates- Proteins – Fats – Vitamins – balanced diet- malnutrition – deficiency diseases- body parts used by animals to get their food – food habits in animals.

2. Living Organisms

Plant cell and animal cell- cell structure and functions- prokaryotic and eukaryotic cell-plant parts and functions-useful and harmful micro organisms- characteristics of living organism- parts helps in movement of human beings and animals-metamorphosis in organisms- sense organs-

fiber from plants and animals- infectious and non-infectious diseases-Physical and behavioural changes in adolescence- characteristics of different animal Phyla.

3. Life Processes

Photosynthesis – human digestive system- human respiratory system – Human circulatory system – Human Excretory system – Human nervous system-Human reproductive system- Human Endocrine system – Oviparous – viviparous – vegetative propagation-seed dispersal – Flower parts – sex determination in human being – reproductive health.

3. Biodiversity

Types of ecosystems –Terrestrial ecosystems and aquatic ecosystems-adaptations in plants and animals living in different ecosystems – food chain – food web – endemic – endangered and extinct species – sanctuaries and National parks – cultivation – irrigation – fertilization – challenges in improving agricultural products.

4. Pollution

Sources and effects of air, water, soil and sound pollution – 4 Rs-Reduce, Reuse, Recycle, Recover.

5. Material

Transparent, translucent, opaque – Characteristics, solids. Liquids, gases-sink & float-soluble in water – methods of separation(Hand packing, Winnowing, sedimentation, sieving, filtration, Crystallization, Evaporation, Sublimations, Chromatography – Change in colour of litmus(Red, Blue) – Characteristics of acids, bases – examples for acids & bases in daily life – Acids rains , impact, remedies- Neutralization-uses of acids, bases in daily life – Acidic and basic nature of salts-uses of salts-Natural fiber, synthetic fiber, burning test-blending – Laundry label symbols – plastic resin codes – Thermoplastics, thermosetting plastics – Reduce, Recycle, Reuse, Recover – General Physical Properties of Metal and non metal – Uses of metals, non-metals in daily life-Archimedes principle – Pascal's principle and uses.

6. Light

Formation of shadow – Characteristics of shadow – straight line motion of light, pinhole camera – differences between shadow and images – laws of reflection-periscope – concave and convex mirrors-making of solar cooker – total internal reflection, applications-mirages – types of lenses- uses of convex and concave lenses in daily life – least distance of distinct vision – Angle of vision – Accommodation defect of human eye (Myopia, Hypermetropia, presbyopia) and their corrections – power of lenses – Dispersion and formation of rainbow- scattering & Blue colour of the sky, Red colour of sun at the time of dawn & dusk.

7. Electricity & Magnetism

Types of magnets – like, unlike poles – simple electric circuit – symbols of components of circuit-torch – conductors, insulators – parts of dry cell – series & parallel connections dry cells and bulbs – Heating effects of electric current – Fuse & MCB – electricity bill & unit- electric shock, precautions-difference between motor & generator – difference between AC and DC.

8. Heat

Heat is a form of energy – Heat and temperature – thermometer, clinical thermometer, laboratory thermometer – Evaporation, factors affecting evaporation – condensation – Humidity – Dew & Fog – Boiling – Melting – Freezing – Enormous expansion of water.

9. Sound

Production of Sound – Propagation of sound in solids, liquids, gases, & vacuum – structure of human ear – types of waves(transverse, Longitudinal) – wave length-Amplitude, Loudness – Frequency – pitch – speed of sound wave in solids, liquids, gases – Reflection of sound – Echo-Reverberation – Audible Range – Uses of Ultra Sonics – Sound Pollution, effects, measures to be taken to control sound pollution.

10. Motion

Uniform, Non-uniform motion –Translator motion-rectilinear motion – curvilinear motion-Rotators motion – oscillatory motion – field forces(Magnetic force, Electrostatics Force, Gravitational force) – Contact forces(Muscular forces, Friction, Normal forces, Tension)-Net Forces – Free body diagram-effects of force – Factors affecting friction – Measures to be taken to increase friction, measures to be taken to decrease friction, kinetic energy – renewable & Non-renewable energy resources – Finding centre of gravity – potential energy – Equations of Uniform accelerated motion – Newton's Laws of Motion 1,2,3,4 daily life examples.

11. Changes

Change in seasons – Natural, man made changes – permanent, temporary changes – change in state & shape of material – reasons for change – Indications of change – Physical Change, Chemical Change – Rusting of Iron / Corrosion – Galvanisation- Browning of Cut vegetables & its prevention – Crystallization.

12. Weather & Climate

Measuring components of weather – Maximum, Minimum, Thermal meter – Rain Gauge – Humidity.

Air exerts pressure – Air expands on heating – effects of moving air- formation of Cyclone, Factors – Cyclones- Do's and Dont's – post Cyclone measures.

13. Coal & Petrol

Uses of coal, petroleum, natural gas-Byproducts of petroleum, uses-formation of coal, petroleum – Indiscriminate usage of energy resources , its effects – ignition temperature – fuel, Calorific Value – Controlling - Structure of Flame , Zones in it.

14. Some Natural Phenomena

Producing charge on an object – identifying charge on an object – measuring to be taken during thunder – lightening conductor – earth quakes, precautions

15. Stars & Solar System

Types of solar and lunar eclipses-pole star – Solar system-planets, Asteroids, comets, metrics.

16. Metallurgy

Minerals, ores, Reactivity series of Metals.

17. Chemical Reactions

Types of Mixtures (Homogeneous, Heterogeneous) – Solutions – Solvents – Solute – types of chemical displacement, chemical double displacements.

SOCIAL STUDIES **(Up to 10 class – Telangana State curriculum)**

1. Geography

Our Earth: Evolution, Latitudes and Longitudes, Movements of the Earth and Seasons, Relief Features of India, Reading and Making Maps, Water Resources – Rivers and Tanks, Climate and Weather: Factors affecting the Climate and Weather, Natural Realms of the Earth: Lithosphere, Atmosphere, Hydrosphere, Biosphere, Natural Vegetation, Population, Settlements and Migration

2. History

Indus Valley Civilization, Emergence of Kingdoms: Mahajanapadas, First Empires: Mauryan Empire, Emergence of Regional Kingdoms – Kaktiyas and Vijayanagara Kingdoms, Mughal Empire, Freedom Movement of India, Democratic and Nationalist Revolutions, Industrial Revolution, Colonialism in Latin America, Asia and Africa, Social Protest Movements : Environmental Movements, Women's Movements, World Between World Wars, Post World Wars – League of Nations, UNO, NAM, Cold War, The Movement for the formation of Telangana State

3. Political Science

Indian Constitution- Salient Features, Forms of Government – Presidential and Parliamentary forms of Government, Government at Different Levels- Union, State, Local Self Government, Judicial System in India: Civil Law, Criminal Law, Courts at different levels, Democracy : An Evolving Ideas; Expansion of Democracy-Libya, Myanmar, Election Process in India, Rights: Human Rights and Fundamentals Rights, Disaster Management, Social Issues: Communalism, Corruption, Poverty, Independent India: 1947-1977, Emerging Political Trends- 1977-2000, Women Protection Acts-Child Rights, Traffic Education.

4. Economics

Money and Banking, Sectors of Economy: Agricultural, Industries Service, Credit in Financial System, Prices and Cost of Living, The Government Budget and Taxation, Food Security, Factors of Production, Globalization, Sustainable Development, Gross Domestic Product; National Income /Per capita Income

TEACHING APTITUDE

Aptitude questions will be related to understanding teaching-learning process, classroom management and mentoring with special reference to teacher-pupil relationship.

GENERAL ENGLISH

Reading comprehension, spelling errors, vocabulary, phrase replacement, error detection and word association.

GENERAL KNOWLEDGE & EDUCATIONAL ISSUES

Current affairs (India and International), Contemporary Educational Issues.

COMPUTER AWARENESS

Computer - Internet, Memory, Networking and Fundamentals.