

TEACHER RECRUITMENT TEST (TRT) - 2023
SCHEME OF EXAMINATION AND SYLLABUS TO THE POST
OF
SECONDARY GRADE TEACHER
Duration: 2 Hours & 30 Minutes

Sl. No.	Subject	Syllabus	No. of Questions	No. of Marks
1.	General Knowledge & Current Affairs	-	20	10
2.	Perspectives in Education	Syllabus as notified	20	10
3.	Language-I (Indian Languages)	The syllabus for Language I & II shall be based on proficiency in the language, elements of language, communication & comprehension abilities-standard upto Secondary Level (X Class)	18	9
4.	Language –II (English)		18	9
Content		Telangana State syllabus from classes I to VIII with difficulty standard as well as linkages upto class X level		
5.	Mathematics		18	9
6.	Science *		18	9
7.	Social Studies **		18	9
8.	Teaching Methodology (Strategy Papers)	D.Ed- T.S Syllabus	30	15
Total			160	80

Note: * Science includes Science content of Environmental Studies (EVS) (Classes I - V), General Science Classes VI & VII) and Physical science & Bio-Science (Class VIII)

** Social Studies includes Social Studies Content of Environmental Studies (EVS) (Classes I - V) and Social Studies (Classes VI - VIII)

Syllabus of Written Test for Recruitment of Secondary Grade Teacher

Part – I

General Knowledge and Current Affairs (Marks: 10)

Part - II

Perspectives In Education (Marks: 10)

I. Historical Development of Education in India

1. Development of Education from Pre-Vedic to Pre-Independent Period.
2. Recommendations of various Educational Committees, Education Commissions, Educational Policies during pre & post independent period and their implications.

II. Philosophical Dimensions of Education

1. Aims, Objectives, Functions; Processes of Education - Unipolar, Bipolar and Tripolar; Types of Education – Formal, Informal and Non-formal Education and their significance.
2. Educational thinkers and their contributions – Swami Vivekananda, Mahathma Gandhi, B.R. Ambedkar, Jiddu Krishnamurthy, Gijubhai Badheka, Rousseau, Froebel, Dewey and Montessori
3. Professional code of conduct for teachers, Professional Ethics – commitment to profession, learner and society
4. Critical Understanding of the difference between knowledge and skill, knowledge and information, teaching and training, reason and belief

III. Sociological Dimensions of Education

1. Social agencies of Education – Home, Peer group, School, Community.
2. Democracy and Education- Equity, Equality of Educational Opportunities in diversified society, Role of Education in promoting democracy.
3. Economics of Education – Education as Human Capital, Education and Human Resource Development

4. Gender: Social construction of gender, gender discrimination, Equity and Empowerment of Women, working towards gender equality in the classroom - the role of teacher.
5. Community Development – Education as an instrument for Social Change and Transformation of Society

IV. Child – Development and Learning

1. Methods of Child Study – Observation, Introspection, Experimental Method and Case Study.
2. Principles of Development and their Educational implications
3. Stages and Dimensions of Development – Growth and development across various stages from pre-natal to adolescence – Physical, Cognitive, Language, Emotional, Social and Moral (Contribution of Piaget, Erikson, Chomsky and Kohlberg), Developmental tasks and their implications, Child Rearing Practices and development
4. Understanding Learner – Individual differences (Intra & Inter) – aptitude, interest, intelligence, thinking (divergent and convergent), attitude, personality
5. Understanding Learning – Concept, Factors effecting Learning – Personal, Environmental and Material; Role of Motivation in Learning; Memory and Forgetting; Learning Theories – Behavioristic (Trial & Error, Classical and Operant Conditioning), Insight, Social and Constructivist (Vygotsky)

V. Professional Development of Teachers

1. Teaching as a Profession
2. Phases of Professional Development – Pre-service and In-service
3. Approaches to Professional Development –Conventional (face to face), Distance, Online, School based, Action Research, Professional Learning Communities, Self - Initiated Learning, Continuous Professional Development (CPD)
4. NCF-2005, NCFTE-2009, NCFSE-2023
5. Teacher Autonomy & Accountability.

6. Institutions relating to Teachers and Teacher Education - NCERT, NCTE, RCI, SCERT, IASE, CTE, DIET

VI. Educational concerns in Contemporary India

1. Environmental Education – Meaning, Scope, Concept of Sustainable Development, Role of Teacher, School and NGOs in development and protection of environment.

2. Population Education – Significance, Population Situation, Consequences of population growth, Approaches and Themes of Population Education, Family Life Education

3. Adolescence Education – Significance, Challenges, Coping Skills and Life Skills.

4. Inclusive Education – Concept, addressing diversified needs, Importance of Early Identification, Methods & Strategies of Classroom Management, Creation of awareness among Students, Parents and Society, Role of Education in creating positive attitude towards diversity.

5. Education in the context of LPG (Liberalization, Privatization, Globalization) – Privatization of Education – Issues of Equal opportunities, Urbanization and Migration.

6. Value Education – Importance of Value Education in Primary and Secondary Stages of Education, role of school and teacher in developing appropriate values among children and creation of an egalitarian society

7. Health & Wellbeing - Physical, Mental, Social and Emotional Health, Yoga Education.

8. Educational Technology, Information and Communication Technology (ICT) and Education – pedagogical implications, exploration of ICT resources for teaching and learning, open educational resources

9. Constitutional Provisions relevant to Education – Fundamental Rights and Duties of Citizens, Right of Children to Free and Compulsory Education Act, 2009, Child Rights, Human Rights, PWD Act, 2016 and other Provisions pertaining to Education.

Part-III: Language-I (Marks-9)

Telugu - Content

1. ప్రాచీన, ఆధునిక కవులు – రచయితలు – విశేషాలు

కావ్యాలు – రచనలు – బిరుదులు – పురస్కారాలు – రచనా శైలి – పాత్రలు – ఇతి వృత్తాలు – నేపథ్యం

2. వివిధ సాహిత్య ప్రక్రియలు – లక్షణాలు – వివరణలు

ఇతిహాసం - పురాణం - ప్రబంధం - శతకం - కథాకావ్యం - వ్యాసం - కథ - కథానిక - నవల - స్వీయ చరిత్ర
- జీవిత చరిత్ర - యాత్రా చరిత్ర వచన కవిత - గేయం

3. భాష - వివిధ రూపాలు

శాసన భాష - గ్రాంథిక భాష - వ్యావహారిక భాష - మాండలిక భాష - ప్రసార మాధ్యమాల భాష - భాషా
పరిరక్షణ అభివృద్ధి సంస్థలు

4. పదజాలం - వ్యాకరణాంశాలు

A) పదజాలం : అర్థాలు - పర్యాయ పదాలు - నానార్థాలు - ప్రకృతి వికృతులు - జాతీయాలు - సామెతలు

B) వ్యాకరణాంశాలు: వర్ణమాల విభాగాలు - భాషా భాగాలు - విభక్తులు - కాలాలు - పురుషులు - కర్త - కర్మ
- క్రియ - లింగాలు - సవర్ణదీర్ఘ, గుణ, ఉత్ప, అత్ప, ఇత్ప సందులు - ద్వంద్వ, ద్విగు,
తత్పురుష సమాసాలు

Part - III

Language - 1 (Indian Languages) (Marks: 09)

URDU (SGT)

-I ادیبوں اور شاعروں کی سوانح حیات وادبی کارنامے

-II اصناف ادب

(i) نثر

(ii) نظم

-III اردو زبان کے عناصر و علم ہجا

(i) حروف - اقسام

(ii) کلمہ - اقسام

(iii) جملہ - اقسام، الفاظ - مفرد و مرکب الفاظ کی قسمیں

(iv) سابقے، لاحقے، واحد، جمع، مونث و مذکر، مجاورے، ضرب المثل،

رموز و اوقاف، صنائع و بدائع، تلفظ، مخارج اعراب

Language I - Hindi – Part – III - Content

1. कवि/लेखक - रचनाएँ, विषयवस्तु, चरित्र चित्रण, भाषा - शैली, पुरस्कार
2. साहित्यिक विधाएँ और उनकी विशेषताएँ
3. भाषा तत्व और व्याकरण
 - शब्द भेद
 - लिंग, वचन, कारक, काल
 - उपसर्ग, प्रत्यय
 - तत्सम, तद्भव, देशज, विदेशी
 - शब्द-अर्थ, भिन्नार्थ, पर्याय, विलोम
 - संधि, समास
 - वाक्य भेद, वाक्य संरचना
 - घटना क्रम, वाक्य क्रम
 - वाच्य
 - मुहावरे, कहावते, लोकोक्तियाँ

Language I - Kannada – Part – III - Content

1. ಪ್ರಾಚೀನ ಮತ್ತು ಆಧುನಿಕ ಕವಿಗಳು - ಲೇಖಕರು - ವೈಶಿಷ್ಟ್ಯಗಳು
ಕವನಗಳು - ಕೃತಿಗಳು - ಶೀರ್ಷಿಕೆಗಳು - ಪ್ರಶಸ್ತಿಗಳು - ಬರವಣಿಗೆಯ ಶೈಲಿ - ಪಾತ್ರಗಳು - ಇತಿ
ವೃತ್ತಗಳು - ಹಿನ್ನೆಲೆ
2. ವಿವಿಧ ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳು - ವೈಶಿಷ್ಟ್ಯಗಳು - ವಿವರಣೆಗಳು
ಮಹಾಕಾವ್ಯ - ಪುರಾಣ - ಪ್ರಬಂಧ - ಶತಮಾನ - ಕಥನ ಕಥನ - ಪ್ರಬಂಧ - - ಕಾದಂಬರಿ -
ಆತ್ಮಚರಿತ್ರೆ - ಜೀವನಚರಿತ್ರೆ - ಪ್ರವಾಸ ಇತಿಹಾಸ ಪಠ್ಯ ಕವಿತೆ - ಹಾಡು

3. ಭಾಷೆ - ವಿವಿಧ ರೂಪಗಳು
ಕಾನೂನು ಭಾಷೆ - ಸಾಹಿತ್ಯಿಕ ಭಾಷೆ - ಆಡುಮಾತಿನ ಭಾಷೆ - ಆಡುಭಾಷೆಯ ಭಾಷೆ -
ಮಾಧ್ಯಮ ಭಾಷೆ - ಭಾಷಾ ಸಂರಕ್ಷಣಾ ಅಭಿವೃದ್ಧಿ ಸಂಸ್ಥೆಗಳು
4. ಶಬ್ದಕೋಶ - ವ್ಯಾಕರಣ ಅಂಶಗಳು
 - A) ಶಬ್ದಕೋಶ: ಅರ್ಥಗಳು - ಸಮಾನಾರ್ಥಕ - ಅಂತಿಮಾರ್ಥಗಳು - ವಿಪಥನಗಳು -
ರಾಷ್ಟ್ರೀಯತೆಗಳು - ರಾಷ್ಟ್ರೀಯತೆಗಳು - ನಾಣ್ಯಡಿ
 - B) ವ್ಯಾಕರಣ ಅಂಶಗಳು: ವರ್ಣಮಾಲೆಯ ವಿಭಾಗಗಳು - ಭಾಷಣ - ಭಾಷಣ ಭಾಗಗಳು -
ಅನಂತಾರ್ಥಗಳು - ಕಾಲಗಳು - ಪುರುಷರು - ಕರ್ತ - ಕರ್ಮ - ಕ್ರಿಯಾ - ಲಿಂಗಗಳು -
ಸರ್ವದೀರ್ಘ, ಗುಣ, ಉತ್ಪ, ಅತ್ಪ, ಇತ್ಪ ಸಂದುಗಳು - ದ್ವಂದ್ವ, ದ್ವಿಗು, ತತ್ಪುರುಷ
ಸಮಾಸ.

Language I - Marati – Part – III - Content

1. ಪ್ರಾಚೀನ आणि आधुनिक कवी - लेखक - वैशिष्ट्ये कविता - कार्य - शीर्षक - पुरस्कार - लेखन
शैली - पात्रे - इति वृत्त - पार्श्वभूमी
2. विविध साहित्य प्रकार - वैशिष्ट्ये - वर्णने महाकाव्य - मिथक - प्रबंध - शतक - कथा कविता -
निबंध - कथा - कथा - कादंबरी - आत्मचरित्र - चरित्र - प्रवास इतिहास मजकूर कविता - कविता
3. भाषा - भिन्न स्वरूप लिखित भाषा - साहित्यिक भाषा - बोलचाल भाषा - बोलीभाषा - माध्यम
भाषा - भाषा संरक्षण विकास संस्था
4. शब्दसंग्रह - व्याकरण
 - A) शब्दसंग्रह : अर्थ - समानार्थी - विरुद्धार्थी - निसर्गाच्या असामान्यता - राष्ट्रीयत्व -
नीतिसूत्रे
 - B) व्याकरण: वर्णमाला विभाग - भाषेचे भाग - विभक्ती - काल - पुरुष - कर्ता - कर्म -
क्रिया - लिंग, सवर्णदर्घ, उभयता अत्व, इत्व संधु - द्वंद्व, द्विगु, तत्पुरुष समास

Syllabus for Tamil : Content

1. பண்டைய புலவர்கள்-நவீன கவிஞர்கள்-எழுத்தாளர்கள்-சிறப்புகள்-இலக்கியங்கள்-படைப்புகள்-விருதுகள்-எழுத்துநடை-கதை மாந்தர்கள்-கதையமைப்பு-பின்னணி
2. பல்வேறு இலக்கிய செயல்முறைகள்-பண்புகள்-விளக்கங்கள்-காவியம்-புராணம்-பிரபந்தம்-சதகம்-புதினம்-கட்டுரை-கதை-தொடர் கதை-நாவல்-சுயசரிதை-வாழ்க்கை வரலாறு-பயண வரலாறு-கவிதை-செய்யுள்-பாடல்
3. மொழி-பல்வேறு வடிவங்கள்
அரசியலமைப்புமொழி-இலக்கிய மொழி-பேச்சு மொழி-வட்பார மொழி-விளம்பர மொழி-மொழி பாதுகாப்பு- மொழி மேம்பாட்டு நிறுவனங்கள்
4. மொழித்திறன்
A) சொல்லாக்கம்:சொற்பொருள்-ஒரு சொல் பலபொருள்-ஒரே பொருள் தரும் பலசொற்கள்-பிரித்து எழுதுக-சேர்த்து எழுதுக-எதிர்ச்சொல்- விடுகதை-பழமொழி-சரியான விடையைத் தேர்ந்தெடு-எதுகை-மோனை, இயைபு-பொருத்துக-இன்ன பிற
B) இலக்கணம்:சார்பெழுத்து-எழுத்து-புணர்ச்சி-எண்-திணை-இடம்-பால்-தொகை நிலை-தொகா நிலை-வல்லினம் மிகும், வல்லினம் மிகா இடம்-யாப்பு-அணி-பகுபதம்,பகாபதம்-வழக்கு-போலி-சுட்டு, வினா எழுத்து-இன்ன பிற-இலக்கண குறிப்பு

Language I – Bengali – Part – III - Content

1. ப்ராசீன ஓ ஆ஢ுனகி கவரி - ஢கெக - வுசெஷ்டீய கவரி - ரகனா - ஶரினா஢ - ஢ூர்ஸ்கார் - ஢கேர ஢ரன - கரதிர - இரி வுதரி - ஢டதுர்஢ரி
2. வரிந்நி ஶா஢ிதீயரே ஢ாரா - வுசெஷ்டீய - வர்நனா ஢காகாவீய - ஢ிதி - ஢ர்வந்஢ - ஶதாவுுரி - ஆ஢ீயான஢ூலக கவரி - ஢ர்வந்஢ - ஢ல்஢ - ஆ஢ீயான - ஓ஢நீயாஸ - ஆத஢ஜீவநீ - ஜீவநீ - துர்஢஢ இத஢ிாஸ ஢ா஢ீய கவரி - கவரி
3. தாஶா - வரிந்நி ஢ர்஢ ஢ிதி தாஶா - ஶா஢ிதீய தாஶா - கத஢஢஢கதந தாஶா - ஓ஢தாஶா தாஶா - ஢டிஶிா தாஶா - தாஶா ஶர்நகஷ஢ ஓந்நீயந ஶர்ஸுதா
4. ஶவுடதா஢ுடார் - வுயாகர஢
A) ஶவுடதா஢ுடார் : அர்஢ - ஢ர்தஶிவுட - வ஢ிரீத ஶவுட - ஢ர்஢ுதரி அஸுவாதாவகரி - ஜாதீயதா - ஢ர்வகந B) வுயாகர஢: வர்நானூர்஢கி வரிதா஢ - தாஶார் அர்ஸ஢ூலரி - வரி஢ுதரி - கால - ஢ூரூ - கர்தா - கர்஢ - கர்ஶிா - ஢டிஶ - ஶவர்நா஢ரிஶ, ஓர்஢ுவதந அத்வ, இதவா ஶாந்஢ு - ஢்வாந்஢வ, ஢்வரி, தர்஢ூரூ ஶ஢ாஸ

Part-IV: English-Content (Marks-9)

1. Parts of speech
2. Types of sentences
3. Tenses
4. Articles and determiners
5. Prepositions
6. Transformation of sentences- voice, reported speech, degrees of comparison, conditionals, relativization, etc.
7. Synthesis of sentences
8. Clauses
9. Phrasal verbs and idioms
10. Uses of expressions /phrases
11. Reading comprehension
12. Composition: Paragraph, essay, expansion, précis, letter writing, message, notice, article and report writing etc.
13. Vocabulary- spelling, synonyms, antonyms, pronunciation, homonyms, homophones, derivatives, word formation, contextual meaning of words, etc.
14. One word substitutes
15. Correction of sentences
16. Figures of speech
17. Framing questions and question tags
18. Proverbs
19. Punctuation

Part-V: Mathematics Content (Marks-9)

1. **Number System (Elementary number theory):** Natural Numbers, Whole Numbers, Integers, Rational Numbers, Fundamental operations and their properties, Numeration and notation, Representation of numbers on number line, properties of numbers; Prime and composite numbers, types of primes (coprime, twin prime, relative prime); Even and odd numbers, divisibility tests; Roman Numerals; HCF and LCM, relation between HCF and LCM, prime factorization and division method; Fractions and Decimals; Representation of decimal numbers (terminating, non-terminating but recurring) in rational form – their fundamental operations and their use in daily life; Squares and Square roots, Cubes and Cube roots; Pythagorean triplets; Playing with numbers; Number patterns
2. **Arithmetic:** Length, weight, capacity, time and money - their standard units - Relation between them - their use in daily life; Ratio and proportion, Direct and indirect proportion, Unitary method, Compound ratio; Percentages- Converting fractions and decimals into percentage and vice-versa; profit – loss, discount, Simple interest, compound interest, Partnership, time & distance and time & work, Problems pertaining to clocks and calendar.

3. **Algebra:** Basic Concepts of Algebra, Algebraic expressions and their Fundamental operations, Factorization, some special products, Identities, solving linear equations in one variable in contextual problems involving multiplication and division (word problems) (with integral coefficient in the equations); Exponents and powers
4. **Geometry:** Basic geometrical concepts – Geometry in real life; 3D, 2D shapes – Nets – drawing - representing; Triangles – types – properties - Median and Altitude of a triangle - centroid, Criteria of congruence - constructions - related theorems; Similar figures - Estimation of heights and distances by similar figures; Quadrilaterals - Types of Quadrilaterals and their properties – constructions – related theorems; Circle and its components - construction; Lines and Angles - Pair of lines – Intersecting lines, perpendicular lines and parallel lines - Pairs of angles - Properties of parallel lines with transversal, Perpendicular bisector - construction; Construction of angles; Symmetry - lines of symmetry - rotational and reflective symmetry - Point of symmetry – Dilations - Tessellations
5. **Mensuration** - Area and Perimeter–Triangle - Quadrilaterals; Area of rectangular paths; Area of the circle - circular paths (Ring) and area of sector, Circumference of Circle; Curved Surface Area & Total Surface Area of a cube and cuboid; Volume and capacity - Volume of cube and cuboid; conversion of units.
6. **Statistics and Probability** – Data- Collection and organisation of data; Pictograph and Bar graphs: Simple pie charts; Measures of central tendency - Mean, Median and Mode of ungrouped and grouped data - Specific usages; Frequency distribution for ungrouped and grouped data- Preparation of frequency distribution table; Frequency graphs (histogram for equal and unequal class intervals, frequency polygon, frequency curve, cumulative frequency curves) and related problems.

Part VI – Science Content (Marks-9)

1. **Measurement:** Measurement of lengths, Units of Measurements, Measurement of thickness of a coin, Measurement of the length of a curved path, Measurement of Area, Measurement of the area of a regular and irregular surface, Measurement of volume, measurement of volume of liquids, Measurement of volume of irregular solids using a measuring cylinder.
2. **Natural Resources:**
 - i. **Air and Water:** Composition of air, Hot air and Cool air, Effects of moving air, Cyclone, Measurement of Atmospheric Pressure, Air Pollution, Sources water on earth,

Forms of water, evaporation of water, condensation of water, water cycle, Water and its uses, Measurement of the volume of water, Water pollution, Process of waste water treatment, safe drinking water stages, Diseases caused by untreated water, other ways of disposing sewage, Types of drainage systems, Draughts, Floods, Conservation of water.

ii. **Weather and Climate:** Measuring components of weather, measurement of temperature of a place, Measurement of rainfall, direction of wind, Humidity, Climate and life style.

iii. **Coal and Petroleum:** Sources of materials, Exhaustible and Inexhaustible materials, Coal - formation, Uses of Coal - Coal, coke and Coal tar, Col gas, Petroleum - formation, refining of petroleum, uses of petroleum, use of natural gases, Petrochemical products, conservation of coal and petroleum, Misuse of energy resources and consequences, harmful effects caused during use of fuels.

iv. **Combustion, Fuels and flame:** Combustible and non-combustible materials, Process of combustion, Ignition temperature, Types of combustion, Fuels, calorific value, Fire control, Flame, structure of flame

3. **Natural Phenomena**

i. **Light:** Sources of light, Shadows, Reflection, Laws of Reflection, Periscope, Kaleidoscope, Pin hole camera, Reflection of light by plane surfaces- Formation of image by a pinhole camera, Fermat principle, Plane mirror, Reflection of light by plane mirror, Plane of reflection, Formation of an image by plane mirror and its characteristics, uses of plane mirrors, Rear view mirror, Spherical mirror, Convex mirror and Concave mirror, Real and Virtual image, Regular and Irregular reflections, Lateral inversion.

ii. **Sound:** Identifying different sounds, Sound is a form of energy, Production of sound, Propagation of sound in different media, Types of waves, Sound waves- Longitudinal, Characteristics of the sound Wave-Loudness, feebleness, Wave length, Amplitude, Time period and frequency, Speed of sound wave, Noise and Music, Musical instruments, Characteristics of a musical Sound-Pitch, Loudness, Quality, Audible range, Sound pollution, Measure to control sound pollution.

iii. **Heat:** Sources of Heat, Heat is a form of an Energy, Heat, Temperature and Units, Measurement of Temperature, Fahrenheit and Centigrade scales, Different types of thermometers.

iv. **Some natural phenomena:** Types of charges and their interaction, Presence of charge of a body, transfer of charge, Lightning, Lightning safety, Lightning conductors, Earthquakes, Tsunami, protection against Earthquakes, Earthquakes in Telangana.

v. **Stars and solar system-** Length of a shadow, North-south movement of the

Sun, Sun dial, Moon, Phases of Moon, Solar and Lunar eclipses, Constellations, Pole star, Solar System, The planets, Stars, Meteors, Asteroids and Comets, Artificial Satellites.

4. **Kinematics and Dynamics**

i. Motion- Motion and rest, Types of motions- Translatory motion, Rotatory motion, Oscillatory motion, Speed, Average speed.

ii. Force: Types of forces- Contact forces and field forces, Net force, Effects of net force acting on a table, Effect of stretched rubber bands on fingers, calculation of net force from free body diagrams, Effect of force on change the state of motion and its direction, Effects of net force on direction of moving object, other effects of force, Pressure.

iii. Friction: Types of friction, Factors affecting friction, friction produces heat, Increasing and decreasing of friction, principle of ball bearings, Fluid friction, factors influencing the fluid friction.

iv. Time: Estimating time, Units of time, Time Measuring instruments.

5. **Magnetism:** Story of magnet, Magnets of different shapes, materials attracted by Magnet, Poles of a Bar magnet, Directions of a Bar magnet, Magnetic compass, attraction and repulsion between two magnets, Earth as a Magnet, Magnetic and non-magnetic substances, Making of a magnet and magnetic compass, Magnetic induction.

6. **Electricity** -Electric cell-Dry cell, Bulb, Switch, Torch light, Electric symbols and their uses, Simple electric circuits, Connecting Electric cells and bulbs in Series and Parallel, Heating effect of electric current, Tube lights, Compact Florescent lamps, Miniature circuit breaker(MCB), Electric fuses, Testing conductivity of materials- conductors, insulators, Electric conductivity of liquids, Electric conductivity of electrolyte, Chemical effect of electric current, Electrolytic cell, Electroplating and its uses.

7. **States of Mater** – Matter around us- Properties of Materials-Transparent, Opaque, translucent, States of matter, Changes in Matter (Physical change and Chemical Change, Slow and fast changes, temporary and permanent changes), Matter- Changing its states.

8. **Materials**

i. Acids, Bases and Salts: Natural indicators, Chemical indicators to test Acids and Bases, Acid rains, Manures, Salts.

ii. Natural Fibres, Synthetic Fibres and plastics: Types of fibres, Natural fibres-Cotton, Jute, Silk, Wool, Yarn to fabric, identifying fibres - burning test, Synthetic fibres- Nylon, Rayon, Acrylic, Polyesters, Plastics-Resin identification codes, Plastics, Types of plastics - Thermo plastics, Thermosetting plastics, plastics and environment, Bio degradable and non-biodegradable, 4R principle, recycling code.

iii. Metals and Non-metals: Physical properties of Metals-Appearance, Sonority, Malleability, Ductility, Electric and Thermal conductivity. Chemical properties of metals- Reaction with oxygen, rusting of metals, Reaction with water, Reaction with Acids, Reactivity of metals, Uses of metals and non-metals.

9. **Separation of Substances**

Separating the components of a mixture, Hand picking, Sedimentation and decantation, sieving and filtration, Crystallization, Sublimation, Evaporation, chromatography.

10. **Biological Sciences:** Introduction, Living and Non-living, Our Food, Food components, Habitat, Importance of Biology in human welfare, Biologists

11. **Living World:** Life and its Characteristics, Classification of Living Organisms, Biodiversity and its conservation, Extinct, Endangered, Endemic and Invasive Alien Species

12. **Microbial World:** The world of Microorganisms- Virus, Bacteria. Algae. Fungi and Protozoan. Useful and Harmful Micro-organisms, Diseases-Causes, Infectious and non-infectious, Acute and chronic, means of spread, antibiotics and vaccines.

13. **Cell & Tissues:** Discovery of the cell, Diversity in Cells, Cell is a Structural and Functional unit of life. Prokaryotic and Eukaryotic Cell. Structure of Eukaryotic Cell, Cell Organelles – Structure and functions, differences between Plant Cell and Animal Cell. Cell Division - Mitosis and Meiosis – their significance, Tissues - Plant and Animal tissues – Types, Structure and Functions.

14. **Plant World:** Morphology of a typical flowering plant - Root, Stem, Leaf, Flower - Parts of a Flower and their functions, Fruit, Modifications of Root. Stem and Leaf, Nutrition in plants- Photosynthesis, Insectivorous plants, Transpiration, Transportation (Ascent of Sap). Respiration, Excretion and Reproduction in Plants, Seed dispersal, Economic importance of Plants, Fibre to fabric- Silk and wool, Soil- our life, Water in our life, Forest- our life, Agricultural Operations – production of food from plants, Seasonal crops, Crop diseases and Control measures, Improvement in Crop yield, Storage and Preservation.

15. **Animal World:** Organs and Organ Systems, Movements in Animals, Reproduction in animals – Oviparous, Viviparous, the age of adolescence, Reproduction in humans, Nutrition in man Nutrients and their functions, Balanced Diet, Deficiency diseases. Tropical diseases, Skin diseases. Blindness in humans: Causes, Prevention and Control, Health agencies, Economic Importance of Animals, Animal Husbandry, Breeding of Cows and Buffaloes

16. **Our Environment:** Water in our Life, Abiotic and Biotic factors, Ecosystem, Different Ecosystems – Terrestrial, Aquatic and Mangrove, Food chain, Food web, Ecological pyramids and their types, Energy Flow in an ecosystem, Energy relations in an Ecosystem,

Adaptations to different ecosystems, Natural Resources Classification, Judicial use of Renewable, Non-renewable and Alternative Resources, Bio-mass and Bio-fuels Non-Conventional Energy Sources Wild Life Conservation, Sanctuaries, National Parks in India. Bio- Geochemical Cycles, Environmental pollution – Common pollutants and their sources, Primary and secondary pollutants, Air, Water, Soil and Sound – causes, effects and preventive measures, Global Warming (Green House Effect), Acid Rains and Depletion of Ozone layer,

17. **Applied Biology:** Production of food from Animals- Pisciculture, Apiculture, Sericulture. Poultry management. NECC, Hybridization.

Part-VII: Social Studies Content (Marks-9)

GEOGRAPHY:

1. Maps: reading analysis, different kinds of Maps and making of maps- Globe as the model of earth.
2. The Solar System and the Earth: Origin and Evolution of the Solar System – Galaxy, The Earth as a member of the Solar System, Origin of the Earth, Interior of the Earth, Rotation and Revolution of the Earth and its effects., Latitudes and Longitudes – Standard time – International date line.
3. Major Landforms: Mountains, plateaus and plains, Classification and Distribution of Mountains in the World, Origin and distribution of plateaus in the World, Classification of plains, Geomorphic process: Rock weathering, mass-wasting, erosion and deposition, Formation of soil and its distribution.
4. Climatology (Weather and Climate): Atmosphere – composition and structure, Insolation – Factors influencing insolation, Temperature – Factors controlling temperature, distribution of temperature and inversion of temperature, Pressure – Global pressure belts, Winds – Planetary, Seasonal & Local, Humidity and Precipitation – Rain – types and distribution of rainfall.
5. Natural Realms of the Earth: Lithosphere- Hydrosphere- Atmosphere and Biosphere.
6. Natural Hazards: Floods, Drought, Cyclones, Tsunamis, Tornadoes, Volcanoes, Earthquakes, Landslides.
7. Ground water: Tanks, building of tanks – decline of tanks and fishing in tanks.- ground water level or water table – rocks and ground water in Telangana- recharging of ground water – quality of ground water and use of ground water.
8. Forests: description and distribution- status of forests in Telangana- tribal use of forests- forest products- economic importance and trade- deforestation- forest conservation- (social forestry) –forest rights Act.
9. Major Natural Regions of the World: The Equatorial Regions, The Tropical Hot Desert

Region, The Savannas or the Tropical Grasslands, The Temperate Grassland Region, The Monsoon Lands, The Mediterranean Region, The Taiga Region, The Tundra Region.

10. Continents: Asia, Africa, Europe, North America, South America, Australia & Antarctica - with reference to location and extent, physical features, climate, Natural Vegetation & Wild life, population, Agriculture, Minerals & Industries, Transportation and Trade.
11. Geography of India and Telangana: Location and extent, physical features – relief and drainage, climate, natural vegetation, agriculture - soils, irrigation, power, population, minerals and industries, Transport and Communication, Seaports and Towns, places of Interest.

HISTORY:

1. Study of the past - Pre-Historic and Proto – Historic Period a) Bronze Age Civilization b) Early Iron Age Societies – Impact of Iron Age and the growth of civilization, Early Iron Civilization in India, The Ancient Chinese Civilization, The Persian, Greek and the Roman Civilization, Judaism and Christianity. c) The Ancient Indian Civilization: Indus Valley Civilization, Aryan Civilization – Early Vedic and Later Vedic Civilization.
2. Religious Movements of 6th Century B.C. – Jainism & Buddhism.
3. India from 200 B.C. to 300 A.D.: The Mahajanapadas, The Mauryas, Andhra Satavahanas, The Persian and Greek Invasion, Magadha, Sangam and Kushans.
4. India from 300 A.D. to 800 A.D.: The Gupta Empire, The Pushyabhuthi Dynasty (Harshavardhana).
5. Deccan and South Indian Kingdoms: The Chalukyas, the Pallavas, the Cholas, the Rashtrakutas, the Yadavas and the Kakatiyas.
6. The Muslim Invasions in India: The Condition of India on the eve of Arab Invasion, Turkish invasions, Ghaznavids raids and its results, Effects of Muslim invasions.
7. Delhi Sultanate: The Slaves, the Khiljis, the Tughluqs, the Sayyids and the Lodis, Downfall of Delhi Sultanate, The Sufi Movement and Bhakthi Movement, Influence of Islam on Indian Culture.
8. The South Indian Kingdom: The Kakatiya, the Vizianagaram and the Bahman Kingdom. The Rule of Golconda, Qutubshahis and Asafjahis.
9. Mughal Empire: The condition of India on the eve of Babur's invasion, Babur, Humayun, Shersha, Akbar, Jahangir, Shahjahan, Aurangajeb, The reasons for the downfall of the Mughal Empire, The Rise of Marathas, History of the Sikhs.
10. Advent of Europeans: Portuguese, Dutch, French & English: Anglo – French rivalry – Carnatic wars, Establishment of British rule in India, The first war of Indian Independence, The Governor Generals and the Viceroy, The Socio – Religious movements, Movements among Muslims for social reforms.

11. Cultural Heritage of India and Intellectual awakening: Art and Architecture, Development of Education, Cultural Unity and Bhakthi movement.
12. India Between 1858 – 1947: Political, Economic and Social Policies of British in India, The British Policy towards Indian princess, British policy towards neighbouring countries.
13. Changes in Economic and Social Sectors during the British period: Agriculture, Famines in India in between 1858 – 1947, Transport facilities, Beginning of Modern Industries, Rise of new classes in Indian Society.
14. Rise of Nationalism – Freedom Movement: Causes for the rise of Nationalism, The Birth of Indian National Congress, The Age of Moderates and Extremists, Vande Mataram Movement, Home Rule Movement, Mahatma Gandhi & Indian National Movement, Quit India Movement, Mountbatten plan, Integration of Princely States, land lords and tenant under British and the Nizam, freedom movements in Hyderabad. Liberation of French and Portuguese colonies.
15. The Modern World: Beginning of Modern Age, Renaissance, Development in Science, The Reformation Movement, Rise of Nation States.
16. World Wars: The First World War, League of Nations, The Second World War, The World after Second World War.

CIVICS:

1. Family, Occupations, Our House & Our Shelter, Community – Types, Community development, Civic life, Social evils in our Society, Our Government: Local Self – Government, Rural, Urban, Decentralization of powers, District administration, Government at the Centre, State with reference to: Executive – Executive council in the Union Govt. and State Govt., Legislative – Indian Parliament, State Legislative Assembly, Legislation and Judiciary and interpretation of laws, Independent Judiciary Judicial system in the country and State, Courts as Watch dogs of Citizens Rights, Lok- Adalats.
2. Indian Constitution: India as a Nation – Preamble, Salient Features of Indian Constitution, Fundamental Rights and Directive Principles, Fundamental Duties, India as a federation and Unitary State, Unity in Diversity & National Integration. Indian Democracy: Meaning, Nature, Democratic Government, village panchayats, local self-Governments in Urban areas. Elections and Election process, Major Political parties, Role of Political Parties in democracy, Presidential and Parliamentary democracy, Information awareness – Right to Information Act. Socialism: Meaning, Definition, Characteristics of Socialism, Social barriers in India, Socialism in Practice – Challenges facing in our country - Illiteracy, regionalism, communalism, child rights, law, society and individual, anti-social practices. Secularism: Need and importance, India – religious tolerance, Promotion of Secularism in India, Gender Equality, right to property, Child Rights.
3. World Peace and Role of India: India in the international era, Foreign Policy Non-Alignment Movement Policy (NAM), India and Common Wealth, India's Relations with Super Powers, India and Neighbours, India and SAARC, India's leading role in the World. UNO and Contemporary World Problems: UNO - Organs and specialized agencies, functions, achievements, India's Role in U.N., Contemporary World problems, New International Economic order, Environmental Protection, Human Rights.

4. Traffic Education / Road Safety Education.
5. Culture and Communication- Handicrafts and handlooms in Telangana- Structural Monuments- performing arts- and artists, Film and print media and sports: Nationalism and Commerce.

ECONOMICS:

1. Economics – Meaning, Definition, Scope, importance – Classification of Economics (Micro & Macro) – Concepts of Economics – different types of goods, wealth, income, utility, value, price, wants and welfare. Basic elements of Economics – Types of utility, consumption, production, distribution, scarcity, Economic agents. Factors of production – Land, Labour, Capital and organization – forms of Business Organization.
2. Theory of Demand: Meaning, determinants of demand, demand schedule – individual & market demand schedule, the law of demand, demand curve, demand function.
3. Supply: Meaning, determinants of supply, supply schedule, Individual and market supply schedule, law of supply, supply curve.
4. Theory of Value: Classification of markets, perfect competition features, price determination.
5. Theory of Distribution: Distribution of income – determination of factor prices – rent, wage, interest and profit.
6. Types of Economics – Capitalistic, Socialistic & Mixed Economy.
7. National Income: Definition of National Income – Concepts – Gross National Product, Net National Product – National Income at factor cost – personal income – disposable income – per capita income – nominal and real G.N.P., National income and distribution – Standard of living, Human development Index – Economic inequalities and poverty line.
8. Budget: Meaning, definition, central and state budgets, Types of budget – Surplus, balanced & deficit, Types of Revenue – Taxation – direct and indirect taxes, Classification of revenue & expenditure in budget, Types of deficits.
9. Money: Definition – functions of money, Classification of money, supply of money.
10. Banking: Commercial banks – Functions, Central Bank – origin and functions, Reserve Bank of India.
11. Economic Growth and Development: Economic Growth, Economic development – concept, Indicators, Factors influencing Economic Development, Economic Development in India.
12. Indian Economy: Characteristic of Indian Economy before Independence: Indian Economy since independence – organized and unorganized Sectors. Population in India – birth and death rate – occupational distribution of population in India and Telangana. Human Resource Development: Meaning of Human Resource Development – Role of Education

and Health in Economic development – Human Development Index. Agriculture Sector in India: Importance – Characteristics of Indian agriculture, causes for low productivity, measures to increase agriculture productivity in India, Land reforms in India – Green Revolution. Industrial Sector: Role of Industrial Sector in Indian Economy – Classification of Industries. Tertiary Sector: Role and importance of Service Sector in Indian Economy. Problems of Indian Economy: Poverty, unemployment and regional disparities. Planning: Meaning and definition – Five Year Plans in India. Disaster management and types of disaster and natural disasters.

Part-VIII: Methodology (Marks -15)

Methodology - TELUGU

1. భాష – నిర్వచనాలు, ఉత్పత్తి వాదాలు, భాషా కుటుంబాలు
2. మాతృభాష – బోధనా లక్ష్యాలు - స్పష్టికరణాలు, కనీస అభ్యసన స్థాయిలు (M.L.Ls) విద్య ప్రమాణలు (Academic Standards) ద్వితీయ భాషగా తెలుగు – త్రిభాషా సూత్రం
3. భాషా నైపుణ్యాలు (Language skills) – సముపార్జనలో అవరోధాలు, అభివృద్ధి చర్యలు, వాని అంతర్గత సంబంధము: ప్రత్యేక అవసరాలు గల పిల్లల భాషాభివృద్ధి
4. మాతృభాష: విద్య ప్రణాళిక, విషయ ప్రణాళిక, పాఠ్య గ్రంథాల నిర్మాణం వార్షిక ప్రణాళిక, యూనిట్ ప్రణాళిక, పీరియడ్ ప్రణాళిక
5. బోధనాభ్యసన సామగ్రి, భాషా ప్రయోగశాల, గ్రంథాలయాలు – పఠనాలయాలు పరామర్శ గ్రంథాలు
6. మూల్యాంకనం – నిరంతర సమగ్ర మూల్యాంకనం – పరీక్షలు, మదింపు

URDU Methodology (SGT)

- I اردو زبان کی نوعیت
- II اردو زبان کے تعلیمی و تدریسی مقاصد
- (i) زبان کی لسانی مہارتیں
- III طریقہ تدریس (نثر، نظم، قواعد، انشا، سرسری مطالعہ)
- IV منصوبہ بندی (سالانہ، یونٹ، سبق)
- V نصاب، نصابی و ہم نصابی سرگرمیاں،
- تدریس و اکتسابی اشیا (TLM)
- VI جانچ (مسلل و جامع جانچ)

Methodology - Hindi

- I. 1. भाषा - अर्थ और स्वरूप
2. प्राथमिक/माध्यमिक स्तर पर हिन्दी शिक्षण के उद्देश्य
3. भाषा की समस्या - त्रिभाषा - सूत्र
- II 1. आदर्श हिन्दी - अध्यापक के गुण
2. अच्छे शिक्षण की विशेषताएँ
3. भाषा - शिक्षण के सामान्य सिद्धांत
4. भाषा - शिक्षण के सूत्र
5. भाषा - शिक्षण की प्रणालियाँ
6. भाषा - शिक्षण की विधियाँ

III 1. शिक्षण में भाषा - कौशलों का महत्व

2. भाषा कौशलों का विकास

सुनना: ध्वनि की उत्पत्ति, ध्वनि - श्रवण और पारस्परिक संबंध

बोलना: शब्दोच्चारण, वाक्यंत्र, शुद्धोच्चारण का अभ्यास, मौखिक अभिव्यक्ति, पाठशाला में वार्तालाप का अभ्यास

पढ़ना: विशेषताएँ, वाचन के प्रकार, वाचन संबंधी दोष और उपचार

लिखना: महत्व, नियम, विधियाँ, प्रकार, अक्षर विन्यास

3. भाषा - कौशलों का समन्वय

IV 1. शिक्षण उद्देश्यों का वर्गीकरण

2. न्यूनतम अधिगम स्तर

3. पाठ - योजना (गद्य, पद्य, व्याकरण, रचना, पत्र - लेखन)

4. इकाई - योजना

5. शिक्षण - उपकरण

V 1. पाठ्यक्रम

2. पाठ्य - पुस्तक

3. पुस्तकालय

4. भाषा सहगामी क्रियाएँ

VI 1. मूल्यांकन की धारणा

2. उत्तम परीक्षा की विशेषताएँ

3. उपलब्धि परीक्षा

4. निरंतर समग्र मूल्यांकन

5. उद्देश्य आधारित मूल्यांकन

6. उपचारात्मक और निदानात्मक शिक्षण

Methodology - Kannada

1. ಭಾಷೆ - ವ್ಯಾಖ್ಯಾನಗಳು, ಉತ್ಪಾದನಾ ವಾದಗಳು, ಭಾಷಾ ಕುಟುಂಬಗಳು
2. ಮಾತೃಭಾಷೆ - ಬೋಧನಾ ಉದ್ದೇಶಗಳು - ಸ್ಪಷ್ಟೀಕರಣಗಳು, ಕನಿಷ್ಠ ಕಲಿಕೆಯ ಮಟ್ಟಗಳು (M.L.Ls) ಶೈಕ್ಷಣಿಕ ಗುಣಮಟ್ಟಗಳು ಕನ್ನಡ ದ್ವಿತೀಯ ಭಾಷೆಯಾಗಿ - ತ್ರಿಭಾಷಾ ತತ್ವ
3. ಭಾಷಾ ಕೌಶಲ್ಯಗಳು, ಅಭಿವೃದ್ಧಿ ಕ್ರಮಗಳು, ಅಡೆತಡೆಗಳು ಸಂಪರ್ಕ: ವಿಶೇಷ ಅಗತ್ಯವಿರುವ ಮಕ್ಕಳ ಭಾಷಾ ಬೆಳವಣಿಗೆ
4. ಮಾತೃಭಾಷೆ: ಶಿಕ್ಷಣ ಯೋಜನೆ, ವಿಷಯ ಯೋಜನೆ, ಪಠ್ಯ ಪುಸ್ತಕಗಳ ರಚನೆ ವರ್ಷ ಯೋಜನೆ, ಘಟಕ ಯೋಜನೆ, ಅವಧಿ ಯೋಜನೆ
5. ಬೋಧನಾ ಸಾಮಗ್ರಿಗಳು, ಭಾಷಾ ಪ್ರಯೋಗಾಲಯ, ಗ್ರಂಥಾಲಯಗಳು - ತರಗತಿಯ ಉಲ್ಲೇಖ ಪುಸ್ತಕಗಳು
6. ಮೌಲ್ಯಮಾಪನ - ನಿರಂತರ ಸಮಗ್ರ ಮೌಲ್ಯಮಾಪನ - ಪರೀಕ್ಷೆಗಳು, ಮೌಲ್ಯಮಾಪನ

Methodology – Marati

1. भाषा – व्याख्या, उत्पादन युक्तिवाद, भाषा कुटुंबे
2. मातृभाषा – अध्यापनाची उद्दिष्टे – स्पष्टीकरण, किमान शिक्षण स्तर (M.L.Ls) शैक्षणिक मानके दुसरी भाषा म्हणून मराठी – त्रिभाषिक तत्व
3. भाषा कौशल्ये – विकासातील अडथळे, संपादनातील अडथळे, मोजमाप कनेक्शन: विशेष गरजा असलेल्या मुलांचा भाषा विकास
4. मातृभाषा: शिक्षण योजना, विषय योजना, पाठ्यपुस्तकांची रचना वर्ष योजना, एकक योजना, कालावधी योजना
5. शिक्षण साहित्य, भाषा प्रयोगशाळा, ग्रंथालय – वर्गखोल्या संदर्भ पुस्तके
6. मूल्यांकन – सतत सर्वसमावेशक मूल्यांकन – चाचण्या, मूल्यांकन

Methodology - Tamil

1. மொழி-வரையறை, மொழி ஆராய்ச்சி-மொழிக்குடும்பம்
2. தாய்மொழி-கற்றல்அடைவுகள்-கற்பித்தல் விளைவுகள்-குறைந்தபட்ச கற்றல் நிலைகள் (M.L.L's), கல்வித் தரங்கள் (Academic Standards) இரண்டாம் பாடமொழியாக தமிழ், மும்மொழிக் கொள்கை
3. மொழித் திறன்கள் (Language Skills)-பயன்படுத்தலில் உள்ள தடைகள்-கல்வி வளர்ச்சி நடவடிக்கைகள்-மொழியிடை இணைப்பு-மாற்று திறனாளி குழந்தைக்கான மொழி வளர்ச்சி
4. தாய்மொழி: கல்வித் திட்டம், பாடத்திட்டம், பாடப்புத்தக அமைப்பு, ஆண்டுத்திட்டம், இயல்திட்டம், பிரிவேளைத் திட்டம்
5. கற்றல் கருவிகள்-மொழி காட்சிச்சாலை-நூலகம்-பாடநூல் விளக்க நூல்கள்
6. மதிப்பீடு-தொடர்ச்சியான மற்றும் முழுமையான மதிப்பீடு-தேர்வுகள், மதிப்பீடுதல்.

Methodology – Bengali

1. ভাষা – সংজ্ঞা, উৎপাদন যুক্তি, ভাষা পরিবার
2. মাতৃভাষা - নির্দেশনামূলক লক্ষ্য - স্পষ্টীকরণ, ন্যূনতম শিক্ষার স্তর (M.L.Ls) একাডেমিক মান দ্বিতীয় ভাষা হিসাবে বাংলা - ত্রিভাষিক নীতি
3. ভাষার দক্ষতা – বিকাশের ক্ষেত্রে বাধা, শিক্ষার ক্ষেত্রে বাধা সংযোগ: বিশেষ চাহিদা সম্পন্ন শিশুদের ভাষা বিকাশ
4. মাতৃভাষা: শিক্ষা পরিকল্পনা, বিষয় পরিকল্পনা, সলিবোস কাঠামো বার্ষিক পরিকল্পনা, একক পরিকল্পনা, সময়কাল পরিকল্পনা
5. পাঠদানের উপকরণ, ভাষা পরীক্ষাগার, গ্রন্থাগার - পড়ার কক্ষ রফোরেন্স বই
6. মূল্যায়ন - ক্রমাগত ব্যাপক মূল্যায়ন - পরীক্ষা, মূল্যায়ন

Methodology - English

1. Aspects of English:- (a) English language – History, Nature, Importance, Principles of English as Second Language (b) Problems of Teaching / Learning English.

2. Objectives of Teaching English.
3. Multilingualism
4. Phonetics
5. Development of Language skills: - (a) Listening, Speaking, Reading & Writing (LSRW) (b) Communicative skills.
6. Approaches, Methods and Techniques of Teaching English, Remedial Teaching.
7. Teaching of Structures and Vocabulary items.
8. Teaching Learning Materials in English
9. Curriculum & Textbooks
10. Academic Standards/ Learning outcomes: competencies and discourses- features of discourses
11. Lesson Planning
12. Continuous Professional Development
13. Using ICT in Teaching English language.
14. Evaluation in English Language, Continuous Comprehensive Evaluation (CCE), tools and techniques for evaluation, types of tests and features of a good test

Methodology – Mathematics

1. **Nature and History of Mathematics:** Meaning and Definition – Nature of Mathematics - Aspects of Mathematics: Concepts, Processes, Symbols and Language - Mathematical thinking and Reasoning – Validation Processes - Truth Criteria - Use of Mathematics in daily life - Correlation with other subjects/ disciplines – Contributions of Indians, Greeks, Egyptians; Pythagoras, Euclid, Baudhayana, Aryabhata, Brahmagupta, Bhaskaracharya-II, Ferma, Srinivasa Ramanujan
2. **How children learn mathematics:** Pre Mathematical Concepts in Child before coming to the School – Psychological implications of learning mathematics - Jean Piaget, Lev Vygotsky – Cognitive development of Child at Primary and Upper Primary Stages – Concept formation and development – Concept Ladder - Gradation of Content from Primary to Upper Primary stage – Readiness programmes - Evolving strategies for identification of Individual differences, Learning difficulties and Catering their needs through Differential Activities – ELPS
3. **Aims and Objectives of teaching Mathematics:** Aims of Teaching Mathematics - Imbibing the Values through Mathematics Teaching - Objectives of teaching Mathematics at

Primary and Upper Primary Level - Blooms Taxonomy - Anderson and Krathwohl's Taxonomy - Teaching Objectives and Specifications - Learning Outcomes/ Indicators in Mathematics and Academic Standards

4. Approaches, Strategies, Methods and Techniques of Teaching and Learning

Mathematics: Natural Learning Experiences – Constructivist Approach – Collaborative Learning Approach (CLA) and Role of Teacher - Approaches and strategies for concept formation – Methods of Teaching Mathematics: Activity Based, Inductive and Deductive; Analytic and Synthetic, Heuristic, Laboratory, Project, Problem Solving - 5 E Learning Model – Multi Level and Multi Grade Teaching – Process of Mathematisation

5. Instructional material and Resources in Mathematics: Learning Resources from Immediate Environment and various sources including digital - Mathematics Kits - Mathematics club - Mathematics Lab – Mathematics Library - Mathematics Corner – Resource Centre - Mathematics Modelling

6. Planning for Teaching Learning Mathematics: Professional preparation of the Teacher – Mapping and mobilisation of Resources for planning – Annual/ Year Plan - Elements of Unit Plan, Lesson Plan /Period plan - Steps in the Lesson Plan /Period plan – Herbartian Steps – SCERT Model – Classroom Observation

7. Assessment and Evaluation of Learning Mathematics: Measurement, Assessment and Evaluation - Types of Evaluation: Prognostic, Diagnostic, Formative, Summative - Continuous and Comprehensive Evaluation (CCE) – Assessment for Learning - Assessment of Learning – Tools of Formative Assessment and Summative Assessment – Designing and Administration of Scholastic Achievement Test (SAT) - Weightage Tables and Blueprint – Types of Test Items: Essay, Short Answer, Very Short Answer, Objective types - Principles of Valuation – Analysis of Achievement Test - Characteristics of good Test - Recording and Reporting – Measures of Students' Achievement – Marks - Grading System – CCE/Cumulative Record – Journal writing – Assessment Framework, Purpose of Assessment, Learning Indicators (LI) - Diagnostic and Remedial Teaching

8. The Mathematics Teacher: Characteristics, Role, Professional Development, Vision, Action Research

9. Curriculum and Text Book: Recommendations of NCF-2005 and APSCF-2011 on Mathematics Curriculum - Recommendations of NCF-2023 on Mathematics Education - Mathematics Curriculum Development and Organisation - Principles and Approaches – Logical and Psychological, Topical, Concentric, Spiral approaches – Review of Mathematics Text Book – Transaction of Text Book – Classroom Environment and Teaching Learning Process

Methodology – Science

Understanding of Science

- Meaning and scope of Science; Importance of Science at primary education level.
- Understanding of concepts selected from Science and Social studies.
- Characteristics of Scientists
- Scientific Method
- Values of Science
- Science – National Curriculum Framework – objectives, principles of teaching – 2005
- National Policy on Education (NPE) – 1986; Ten National Core elements.

2. Understanding Children’s Ideas

- Knowledge 5-12 year age group children have
- How children acquire this knowledge?
- Development of concepts of Science through Piaget’s cognitive developmental stages

3. Teaching of Science/Classroom Transactions

- Activity Based approach
- Process Approach
- Using children’s ideas as a source for learning
- Role of the teacher in classroom transaction
- Use of Information and Communication Technology (ICT) in the classroom

4. Understanding Textbooks and Pedagogy

- Philosophy and guiding principles for the development of Science text books
- Content, Approaches and Methods of teaching Science
- Interactive and participatory methods
- Themes and structures of a unit
- Academic Standards and Learning Indicators
- Learning Resources of effective transaction of Science Curriculum

5. Teaching and Learning Science

- Addressing children's alternative concepts
- Concept Map
- Resource pool of science material and popular science
- Locally available materials
- Audio-Visual and Electronic material
- Primary Science kit
- Library
- Peer group learning – using children's ideas
- Science Museum
- Science Laboratory

6. Assessment and Evaluation

- Assessment and Evaluation – definition, need and importance
- Continuous and Comprehensive Evaluation context
- Assessment of Process skills
- Rubrics
- Teaching Readiness and planning of teaching Science

Methodology – Social Studies

1. Concept, nature, scope and significance of Environmental Studies (Science & Social Studies) and its historical development, EVS an Integrated subject
2. Values, aims, and objectives of teaching EVS, Academic standards / Learning outcomes of teaching EVS.
3. Development of EVS Curriculum and Textbooks, its Classroom transaction
4. Planning for effective instruction in EVS, different plans and designing learning experiences, multi grade/class teaching, Teacher qualities, roles and responsibilities in view of development of innate abilities among children.
5. Learning environment and resources, TLM, ICT applications
6. Concept of evaluation, types of evaluation, CCE, Action Research