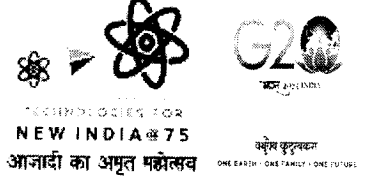




परमाणु ऊर्जा शिक्षण संस्था
(भारत सरकार के परमाणु ऊर्जा विभाग का स्वायत्त निकाय)
ATOMIC ENERGY EDUCATION SOCIETY
(An Autonomous Body under Department of Atomic Energy, Govt. of India)



AEES/R&V/PQ/2026/C-210

5 मई, 2026

परिपत्र/CIRCULAR

विषय प.ऊ.शि.सं. में विभिन्न शिक्षण पदों पर, सीमित विभागीय परीक्षा (LDE) (योग्यता-सह-वरिष्ठता) के आधार पर 'पदोन्नति कोटा' के अंतर्गत, उम्मीदवारों के पैनल में शामिल किए जाने हेतु दिशानिर्देश।/ **Subject:** सह-वरिष्ठता) के आधार पर 'पदोन्नति कोटा' के अंतर्गत, उम्मीदवारों के पैनल में शामिल किए जाने हेतु दिशानिर्देश।/ Guidelines for empanelment of candidates in AEES for various teaching posts against Promotion Quota on Limited Departmental Examination (LDE) (Qualifying-cum-Seniority) basis.

प.ऊ.शि.सं. के पात्र कर्मचारियों को प्रधानाचार्य, उप-प्रधानाचार्य, स्नातकोत्तर शिक्षक (पीजीटी), प्रशिक्षित स्नातक शिक्षक (टीजीटी), और प्रधानाध्यापक/प्रधानाध्यापिका (एचएम) के पदों पर पदोन्नति कोटे के तहत, योग्यता-सह-वरिष्ठता के आधार पर पैनल में शामिल करने के लिए, 'सीमित विभागीय परीक्षा' (एलडीई) आयोजित करने हेतु निम्नलिखित संशोधित विस्तृत दिशानिर्देश जारी किए जाते हैं। ये दिशानिर्देश इस संबंध में प.ऊ.शि.सं. द्वारा पूर्व में जारी किए परिपत्रों और निर्देशों को निरस्त कर उनके स्थान पर प्रभावी होगा, जिसमें प.ऊ.शि.सं. परिपत्र संख्या AEES/R&V/PQ/2019/2307 दिनांकित 11.09.2019 भी शामिल है।

The following revised comprehensive guidelines are hereby issued for the conduct of the Limited Departmental Examination (LDE) for empanelment of eligible AEES employees to the posts of Principal, Vice-Principal, Post Graduate Teachers (PGTs), Trained Graduate Teachers (TGTs), and Head Master/Head Mistress (HM) against Promotion Quota on Qualifying-cum-Seniority basis. These guidelines supersede all previous circulars and instructions issued by AEES in this regard, including AEES Circular No. AEES/R&V/PQ/2019/2307 dated 11.09.2019.

1. नियुक्ति की प्रक्रिया/Method of Recruitment-

उपर्युक्त पदों पर भर्ती की विधि अर्हता-सह-वरिष्ठता के आधार पर सीमित विभागीय परीक्षा (एलडीई) के माध्यम से की जाएगी। अंतिम पैनल का गठन फीडर कैडर के उन अभ्यर्थियों की आपसी वरिष्ठता के आधार पर किया जाएगा, जो लिखित परीक्षा (तथा जहाँ लागू हो, साक्षात्कार) उत्तीर्ण करते हैं और निर्धारित मानदंडों को पूरा करते हैं, बशर्ते कि रिक्तियां उपलब्ध हों।

The method of recruitment to the aforesaid posts shall be through Limited Departmental Examination (LDE) on Qualifying-cum-Seniority basis. The final empanelment shall be based on the inter-se-seniority of candidates from the feeder cadre who qualify the Written examination (and Interview, wherever applicable) and satisfy the prescribed benchmarks, subject to availability of vacancies.

2. लिखित परीक्षा/साक्षात्कार/Written test/Interview-

2.1 परीक्षा की संरचना (ओएमआर + पेन-पेपर) निम्नानुसार होगी/The examination structure (OMR + Pen paper) shall be as follows:

परीक्षा के घटक Component of the Test	वस्तुनिष्ठ प्रश्न Objective questions	वर्णात्मक प्रश्न Descriptive questions	कुल प्रश्न एवं अंक Total questions and Marks	अवधि Duration
विस्तृत पाठ्यक्रम एक परिशिष्ट के रूप में संलग्न है। The detailed syllabus is enclosed as an Annexure.	60 प्रश्न/ 60 questions	10 प्रश्न 10 questions	70 प्रश्न 70 questions	2 घंटे एवं 30 मिनट 2 Hours and 30 Minutes
	ओएमआर आधारित प्रत्येक 1 अंक OMR based - 1 mark each	पेन-पेपर- प्रत्येक 4 अंक Pen-paper- 4 marks each	100 (60 + 40) अंक/Marks	

2.2 बेंचमार्क दिव्यांगता वाले व्यक्तियों के मामले में प्रतिपूरक समय प्रति घंटे की परीक्षा के लिए 20 मिनट की दर से प्रदान किया जाएगा। ऐसे सभी दिव्यांग अभ्यर्थी जो स्क्राइब (लेखक) की सुविधा का उपयोग नहीं कर रहे हैं, उन्हें तीन घंटे की अवधि वाली परीक्षा के लिए न्यूनतम एक घंटे का अतिरिक्त समय प्रदान किया जा सकता है। Compensatory time to be allowed in the case of Persons with Benchmark Disabilities (PwBD) is 20 minutes per hour of examination. All candidates with disability not availing the facility of scribe may be allowed additional time of minimum of one hour for examination of three hours duration.

2.3 कोई नकारात्मक अंकन नहीं होगा।/There shall be no negative marking.

2.4 यह एक पदोन्नति पद होने के कारण, पैनल में शामिल किए जाने हेतु विचार किए जाने के लिए लिखित परीक्षा/साक्षात्कार (जहाँ लागू हो) में न्यूनतम अर्हता अंक अनारक्षित श्रेणी के लिए 40% तथा अनुसूचित जाति/अनुसूचित जनजाति एवं बेंचमार्क दिव्यांगता वाले अभ्यर्थियों के लिए 35% निर्धारित होंगे।

Being a promotional post, minimum qualifying marks in Written Test/Interview (as applicable) for consideration for empanelment will be 40% for Unreserved (UR) category whereas 35% for Scheduled Caste (SC)/ Scheduled Tribe (ST) and PwBD applicants.

2.5 यदि अनुसूचित जाति/अनुसूचित जनजाति श्रेणी के अभ्यर्थी अनारक्षित पदों के विरुद्ध आवेदन करते हैं, तो उन्हें लिखित परीक्षा, साक्षात्कार अथवा एपीएआर ग्रेडिंग में किसी भी प्रकार की छूट प्रदान नहीं की जाएगी तथा उन्हें अनारक्षित श्रेणी के अभ्यर्थियों के साथ प्रतिस्पर्धा करनी होगी।

In case candidates belonging to SC/ST categories apply against UR posts, they will NOT be entitled to any relaxation in scores in the Written examination, Interview, or APAR gradings, and they will be required to compete with candidates belonging to the Unreserved category.

2.6 वस्तुनिष्ठ/लिखित/वर्णात्मक परीक्षा के पुनर्मूल्यांकन का कोई प्रावधान नहीं है। इस संबंध में किसी भी कारण से प्राप्त कोई भी अनुरोध स्वीकार नहीं किया जाएगा। अभ्यर्थी निर्धारित समय-सीमा के भीतर उत्तर-कुंजी के विरुद्ध आपत्तियाँ प्रस्तुत कर सकते हैं, तथा समय-सीमा के पश्चात किसी भी प्रकार की आपत्ति स्वीकार नहीं की जाएगी। आपत्ति दर्ज कराने हेतु प्रति प्रश्न ₹1000 का शुल्क देय होगा। यह शुल्क अप्रतिदेय है; तथापि, यदि विषय विशेषज्ञों द्वारा आपत्ति स्वीकार कर ली जाती है, तो उक्त शुल्क वापस कर दिया जाएगा।

There is no provision for re-evaluation of Objective (OMR)/Written/Descriptive examination. No request in this regard will be entertained irrespective of the reasons. Candidates may submit challenges to the answer key within the stipulated time, and no challenges will be entertained after the deadline. A fee of ₹1000 per question must be paid for submitting challenges. The fee is non-refundable; however, it will be refunded if the challenge is accepted by subject experts.

2.7 प्रधानाचार्य एवं उप-प्रधानाचार्य हेतु साक्षात्कार: प्रधानाचार्य एवं उप-प्रधानाचार्य के पद के लिए 100 अंकों का साक्षात्कार आयोजित किया जाएगा। अधिसूचित रिक्तियों के लिए लिखित परीक्षा में अर्हता-सह-वरिष्ठता के आधार पर अभ्यर्थियों को 1:3 के अनुपात में साक्षात्कार हेतु आमंत्रित किया जाएगा।

Interview for Principal and Vice-Principal: There will be an Interview of 100 marks for the post of Principal & Vice-Principal. Candidates shall be called for Interview in a ratio of 1:3 against vacancies notified for the post, based on Qualifying-cum-Seniority in the written examination.

2.8 लिखित परीक्षा और साक्षात्कार (जहाँ भी लागू हो) का भारांक निम्नानुसार है/The weightage of Written test and Interview (wherever applicable) is as follows:

क्र.सं. Sl.No	पद का नाम Name of the Post	अंक Marks	भारांक Weightage
1	प्रधानाचार्य/उप-प्रधानाचार्य Principal /Vice-Principal	लिखित/Written - 100 साक्षात्कार/Interview - 100	लिखित/Written - 85% साक्षात्कार/Interview - 15%
2	स्नातकोत्तर शिक्षक, प्रशिक्षित स्नातक शिक्षक, प्रधानाध्यापक PGTs, TGTs, and HMs	लिखित/Written - 100 साक्षात्कार लागू नहीं Interview - Not applicable	लिखित/Written - 100%

2.9 अंतिम चयन पद के लिए अधिसूचित रिक्तियों के अनुसार साक्षात्कार में अर्हता-सह-वरिष्ठता के आधार पर किया जाएगा। जिन मामलों में साक्षात्कार का प्रावधान नहीं है, उन स्थितियों में अंतिम चयन पद के लिए अधिसूचित रिक्तियों के अनुसार लिखित परीक्षा में अर्हता-सह-वरिष्ठता के आधार पर किया जाएगा।

The final selection will be on the basis of Qualifying-cum-Seniority in the Interview as per the vacancies notified for the post. In case where the element of Interview is not involved, the final selection will be on the basis of Qualifying-cum-Seniority in the Written examination as per the vacancies notified for the post.

2.10 पैनल में सम्मिलन हेतु: वे अभ्यर्थी जिन्होंने लिखित परीक्षा तथा साक्षात्कार (जहाँ लागू हो) उत्तीर्ण किया है और जिनके पास वार्षिक प्रदर्शन मूल्यांकन प्रतिवेदन (एपीएआर) में निर्धारित न्यूनतम मानदंड उपलब्ध हैं, उन्हें उनकी वरिष्ठता के आधार पर तथा संबंधित श्रेणी एवं विषय में रिक्तियों की उपलब्धता के अधीन विचार किया जाएगा।

For empanelment- Candidates qualified in the Written test, Interview (wherever applicable) and possess minimum benchmark in Annual Performance Appraisal Report (APAR) will be considered as per their seniority and subject to availability of vacancies under respective category & subject.

3. पात्रता मापदंड/Eligibility Criteria

3.1 शैक्षिक योग्यता और सेवा अनुभव/Educational Qualification and Service Experience-

- अभ्यर्थियों के पास संबंधित पद हेतु आवश्यक शैक्षणिक योग्यताएँ होनी चाहिए तथा फीडर संवर्ग में नियमित सेवा की निर्धारित अवधि को पूरा करना आवश्यक है, जैसा कि प.ऊ.शि.सं. भर्ती नियमों (प.ऊ.शि.सं. की वेबसाइट पर उपलब्ध) में निर्दिष्ट है। यह सभी शर्तें संबंधित सीमित विभागीय परीक्षा (एलडीई) चक्र के लिए अधिसूचित कट-ऑफ तिथि के अनुसार पूर्ण होनी चाहिए।/Candidates must possess the educational qualifications and fulfil the requisite length of regular service in the feeder cadre as specified in AEES Recruitment Rules (available on AEES website) for the respective post, as on the cut-off date notified for the respective LDE cycle.

- केवल प.ऊ.शि.सं. के नियमित कर्मचारी के रूप में संबंधित फीडर पद पर दी गई सेवाओं को ही गणना में लिया जाएगा। अन्य विभागों/संगठनों में प्रदान की गई पूर्व सेवाओं को सीमित विभागीय परीक्षा (एलडीई) के माध्यम से पदोन्नति हेतु अर्हता अनुभव के रूप में मान्य नहीं किया जाएगा।/Services rendered as an AEES regular employee only in the specific feeder post shall be counted. Past service rendered in other departments/organisations shall not be reckoned as qualifying experience for promotion through LDE.

- अर्हकारी सेवा की गणना करते समय अविनियमित अवकाश की अवधि को विचार में नहीं लिया जाएगा।

Non-regularised periods of leave may not be considered while calculating qualifying service.

3.2 वार्षिक प्रदर्शन मूल्यांकन प्रतिवेदन (एपीएआर): वार्षिक प्रदर्शन मूल्यांकन प्रतिवेदन का मानक पूर्ववर्ती पाँच वर्षों के सभी एपीएआर के आधार पर निर्धारित किया जाता है, जो दिनांक 08.02.2002 एवं 18.02.2008 की डीओपीटी दिशानिर्देशों के अनुसार है। इसके अनुसार, लेवल 11 तक के अधिकारियों के लिए "अच्छा" का मानक आवश्यक है, जबकि लेवल 12 एवं उससे ऊपर के अधिकारियों के लिए "बहुत अच्छा" का मानक आवश्यक होगा।

APAR Benchmark- The APAR benchmark is determined based on all APARs of the preceding five years, in accordance with the DoPT guidelines dated 08.02.2002 and 18.02.2008, wherein officers up to Level 11 are required to have a benchmark of "Good," while officers at Level 12 and above must meet a benchmark of "Very Good."

3.3 विषय-विशिष्ट शर्तें/Subject-specific Conditions-

- पीजीटी एवं टीजीटी के पदों के लिए, अभ्यर्थी केवल एक ही विषय के लिए आवेदन कर सकता/सकती है।

For the posts of PGT and TGT, a candidate can apply for one subject only.

- प्रधानाध्यापक एवं प्रशिक्षित स्नातक शिक्षक के पदों हेतु: अभ्यर्थियों के पास सीटेट की अर्हता होना अनिवार्य है (प्रधानाध्यापक पद हेतु आवेदन करने वाले प्राथमिक शिक्षक/शिक्षिका के लिए पेपर-I तथा प्रशिक्षित स्नातक शिक्षक पद हेतु आवेदन करने वाले प्राथमिक शिक्षक/शिक्षिका के लिए पेपर-II)। अनुसूचित जाति/अनुसूचित जनजाति एवं बेंचमार्क दिव्यांगता अभ्यर्थियों के लिए अर्हता अंकों में 5% की छूट प्रदान की जाएगी (अर्थात् सीटेट में 55% अंक या 150 में से 82 अंक)।

For the post of Head Master and Trained Graduate Teachers (TGTs), candidates must possess CTET qualification (Paper-I in case of PRTs applying for Head Master and Paper-II in case of PRTs applying for TGTs). There shall be 5% relaxation in qualifying marks for SC/ST/PwBD candidates (i.e., 55% marks or 82 out of 150 in CTET).

3.4 सतर्कता एवं अनुशासनिक अनापत्ति स्वीकृति/Vigilance/Disciplinary Clearance-

- जो अभ्यर्थी कट-ऑफ तिथि के अनुसार तथा आवेदन पत्र प्रस्तुत करने की तिथि पर दंड की अवधि के अंतर्गत हैं, वे सीमित विभागीय परीक्षा के माध्यम से आवेदन करने के लिए पात्र नहीं होंगे।/Candidates who are under Currency of Penalty as on the cut-off date and as on the date of submission of the application form shall NOT be eligible to apply through LDE.

- यदि किसी कर्मचारी के विरुद्ध कट-ऑफ तिथि के अनुसार तथा/या आवेदन पत्र प्रस्तुत करने की तिथि पर कोई अनुशासनिक मामला लंबित है अथवा विचाराधीन है, तो ऐसे कर्मचारी को कार्यवाही के अंतिम परिणाम के अधीन रहते हुए सीमित विभागीय परीक्षा में अस्थायी रूप से सम्मिलित होने की अनुमति दी जा सकती है।/If a disciplinary case is pending or contemplated against any employee as on the cut-off date and/or on the date of submission of the application form, such employee may be allowed provisionally to appear in the LDE, subject to the final outcome of the proceedings.

प.ऊ.कें.वि. के सभी प्रमुखों से अनुरोध है कि इस परिपत्र की विषयवस्तु को उनके अधीन कार्यरत शिक्षकों के संज्ञान में लाया जाए तथा इसकी एक प्रति शिक्षक कक्ष (स्टाफ रूम) के सूचना-पट्टों पर प्रदर्शित की जाए। इस पर प्राप्त दिनांकित अभिस्वीकृति को अभिलेख हेतु इस कार्यालय को अग्रेषित किया जाए।

All the Heads of AECSs are requested to bring contents of this circular to the notice of teachers working under their control and a copy of the same be displayed in the staff room notice boards. The dated acknowledgement obtained thereon be forwarded to this office for records.

संलग्न/Encl: अनुलग्नक/Annexure (प.ऊ.शि.सं.-पाठ्यक्रम/AEES syllabus)

ललित मोहन पंत 05th May 2026

(डॉ. ललित मोहन पंत/Dr. Lalit Mohan Pant)

सचिव/Secretary

सभी प.ऊ.कें.वि. के प्रमुख/All Heads of AECSs.

Atomic Energy Education Society

Scheme & Syllabus of exam for the post of Principal, Vice-Principal, Headmaster PGT(Hindi,English,Physics,Chemistry,Mathematics,Biology,History,Economics, Geography, Commerce, Computer Science),TGT(English, Social Studies, Mathematics-Physics, Chemistry-Biology, Hindi-Sanskrit, Marathi, Tamil) through Limited Departmental Examination (LDE).

Subject Knowledge Examination (Combination of Pen-paper and OMR Based)

Component of the Test	No. of questions		Total Marks		Duration of the Test 2 ½ hours
	Objective	Descriptive	Objective	Descriptive	
Detailed syllabus given below	60	10	60	40	

Detailed syllabus for the post of Principal

I Prospective on Education and Leadership:

A	Understanding the Learner
	<ul style="list-style-type: none"> ▪ Concept of growth, maturation and development, principles and debates of development, ▪ Development tasks and challenges with special reference to the foundational, preparatory, middle and secondary school children ▪ Domains of Development: Physical, Cognitive, Socio-emotional, Moral etc., deviations in development and its implications. ▪ Role of Primary and Secondary Socialization agencies. Steps to ensure Home school continuity. ▪ Mental Health and Well Being.
B	Understanding Teaching Learning
I	<p>Theoretical perspectives on Learning -Behaviorism, Cognitivism and Constructivism with special reference to their implications for:</p> <ul style="list-style-type: none"> • The role of Principal • Role of Vice-Principal and HM • The role of teacher • The role of learner • Nature of teacher-student relationship • Innovative Pedagogical Practices • Productive Classroom environment • Understanding of discipline, power etc.
II	<p>Factors affecting learning and their implications for:</p> <ul style="list-style-type: none"> • Designing classroom instructions, • Planning student activities and, • Creating learning spaces in school
C	Planning and Organization of Teaching-Learning

	<ul style="list-style-type: none"> • Concept of Syllabus and Curriculum, Overt and Hidden Curriculum • Preparation of School Time-table • Foundational Literacy and Numeracy, Early Childhood Care and Education • Competency Based Lesson Planning. • Competency Based Assessment • Instructional Material and Resources • Digital Technology in Teaching Learning • Classroom Observation, Feedback and Follow-up, Reflections and Dialogues as a means of constructivist teaching
D	Creating Conducive Learning Environment
	<ul style="list-style-type: none"> • Inclusive Education: The concepts of Diversity, disability and Inclusion, implications of disability as social construct, types of disabilities-their identification and interventions • Concept of School Mental Health & Well Being. Addressing the curative, preventive and promotive dimensions of mental health for all students and staff. Provisioning for guidance and counselling. • Developing School and community as a learning resource. • Right of Person with Disability Act-2016 as amended from time to time.
E	School Organization and Leadership
	<ul style="list-style-type: none"> • Leader as reflective practitioner, team builder, initiator, coach and mentor. • Perspectives on School Leadership: instructional, distributed and transformative • Vision building, goal setting and creating a School development Plan • Using School Processes and forums for strengthening teaching learning-Annual Calendar, time-tabling, parent teacher forums, school assembly, teacher development forums, using achievement data for improving teaching –learning, School Self-Assessment and Improvement • Creating partnerships with community, industry and other neighboring schools and Higher Education Institutes – forming learning communities, • School Accreditation.
F	Perspectives in Education
	<ul style="list-style-type: none"> • Role of school in achieving aims of education. • Educational Policies of Govt of India • National Education Policy-2020 • National Curriculum Framework Foundational Stage-2022 • National Curriculum Framework School Education-2023 • NIPUN Bharat Mission • Guiding Principles for Child Rights, Protecting and provisioning for rights of children to safe and secure school environment, • Right of Children to free and Compulsory Education Act, 2009, • Historically studying the National Policies in education with special reference to school education; • School Curriculum Principles: Perspective, Learning and Knowledge, Curricular Areas, School Stages – Pedagogy & Assessment

II Management, Supervision and Leadership

Management: its nature and scope; The Management Processes; Planning, Organization, Staffing, Directing and Controlling; The Role of a Manager in an Organization. Leadership: The Tasks of a Leader, Leadership Styles; Leadership Theories; A successful Leader versus an effective Leader. Human Resource Development: Concept of HRD; Goals of HRD; Performance Appraisal — Potential appraisal and development — Feedback and Performance Counseling — Career Planning — Training and Development — Rewards — Employee Welfare. Motivation, Morale and Incentives: Theories of Motivation; How Managers Motivate; Concept of Morale; Factors determining morale; Role of Incentives in Building up Morale. Communication: Steps in the Communication Process; Communication Channels; Oral versus Written Communication; Verbal versus non-verbal Communication; upward, downward and lateral Communication; Barriers to Communication, Role of Information Technology. Class Observation and School Supervision. Ethics in School Management. Emotional Intelligence.

III Administration and Finance

- Office Procedure & Office Management
- CCS (CCA) Rules 1965
- CCS (Conduct) Rules 1964
- Fundamental & Supplementary Rules
- TA Rules
- Leave Travel Concession Rule.
- Principles of School Budget
- Medical Attendance Rules & CGHS
- Right to Information Act 2005
- Contract Labour (Abolition and Regulation) Act, 1970
- Income Tax & GST
- POSH & POCSO Acts
- MoE, NCPCR and NDMA guidelines for school safety and security
- Constitutional Provisions for PwD, EWS, SC/ST and other disadvantaged groups
- General Financial Rules – 2017
- CCS(Pension) Rules 2021, NPS
- Human Rights

Detailed syllabus for the post of Vice- Principal

I Prospective on Education and Leadership:

A	Understanding the Learner
	<ul style="list-style-type: none"> ▪ Concept of growth, maturation and development, principles and debates of development, ▪ Development tasks and challenges with special reference to the foundational, preparatory, middle and secondary school children ▪ Domains of Development: Physical, Cognitive, Socio-emotional, Moral etc., deviations in development and its implications. ▪ Role of Primary and Secondary Socialization agencies. Steps to ensure Home school continuity. ▪ Mental Health and Well Being.
B	Understanding Teaching Learning
I	<p>Theoretical perspectives on Learning -Behaviorism, Cognitivism and Constructivism with special reference to their implications for:</p> <ul style="list-style-type: none"> • The role of Principal • Role of Vice-Principal and HM • The role of teacher

II	<ul style="list-style-type: none"> • The role of learner • Nature of teacher-student relationship • Innovative Pedagogical Practices • Productive Classroom environment • Understanding of discipline, power etc. <p>Factors affecting learning and their implications for:</p> <ul style="list-style-type: none"> • Designing classroom instructions, • Planning student activities and, • Creating learning spaces in school
C	Planning and Organization of Teaching-Learning
	<ul style="list-style-type: none"> • Concept of Syllabus and Curriculum, Overt and Hidden Curriculum • Preparation of School Time-table • Foundational Literacy and Numeracy, Early Childhood Care and Education • Competency Based Lesson Planning. • Competency Based Assessment • Instructional Material and Resources • Digital Technology in Teaching Learning • Classroom Observation, Feedback and Follow-up, Reflections and Dialogues as a means of constructivist teaching
D	Creating Conducive Learning Environment
	<ul style="list-style-type: none"> • Inclusive Education: The concepts of Diversity, disability and Inclusion, implications of disability as social construct, types of disabilities-their identification and interventions • Concept of School Mental Health & Well Being. Addressing the curative, preventive and promotive dimensions of mental health for all students and staff. Provisioning for guidance and counselling. • Developing School and community as a learning resource. • Right of Person with Disability Act-2016 as amended from time to time.
E	School Organization and Leadership
	<ul style="list-style-type: none"> • Leader as reflective practitioner, team builder, initiator, coach and mentor. • Perspectives on School Leadership: instructional, distributed and transformative • Vision building, goal setting and creating a School development Plan • Using School Processes and forums for strengthening teaching learning-Annual Calendar, time-tabling, parent teacher forums, school assembly, teacher development forums, using achievement data for improving teaching –learning, School Self-Assessment and Improvement • Creating partnerships with community, industry and other neighboring schools and Higher Education Institutes – forming learning communities, • School Accreditation.
F	Perspectives in Education
	<ul style="list-style-type: none"> • Role of school in achieving aims of education. • Educational Policies of Govt of India • National Education Policy-2020 • National Curriculum Framework Foundational Stage-2022 • National Curriculum Framework School Education-2023 • NIPUN Bharat Mission • Guiding Principles for Child Rights, Protecting and provisioning for rights of children to safe and secure school environment, • Right of Children to free and Compulsory Education Act, 2009, • Historically studying the National Policies in education with special reference to school education; • School Curriculum Principles: Perspective, Learning and Knowledge, Curricular Areas, School Stages – Pedagogy & Assessment

II Management, Supervision and Leadership

Management: its nature and scope; The Management Processes; Planning, Organization, Staffing, Directing and Controlling; The Role of a Manager in an Organization. Leadership: The Tasks of a Leader, Leadership Styles; Leadership Theories; A successful Leader versus an effective Leader. Human Resource Development: Concept of HRD; Goals of HRD; Performance Appraisal — Potential appraisal and development — Feedback and Performance Counseling — Career Planning — Training and Development — Rewards — Employee Welfare. Motivation, Morale and Incentives: Theories of Motivation; How Managers Motivate; Concept of Morale; Factors determining morale; Role of Incentives in Building up Morale. Communication: Steps in the Communication Process; Communication Channels; Oral versus Written Communication; Verbal versus non-verbal Communication; upward, downward and lateral Communication; Barriers to Communication, Role of Information Technology. Class Observation and School Supervision. Ethics in School Management. Emotional Intelligence.

III Administration and Finance

- Office Procedure & Office Management
- CCS (CCA) Rules 1965
- CCS (Conduct) Rules 1964
- Fundamental & Supplementary Rules
- TA Rules
- Leave Travel Concession Rule.
- Principles of School Budget
- Medical Attendance Rules & CGHS
- Right to Information Act 2005
- Contract Labour (Abolition and Regulation) Act, 1970
- Income Tax & GST
- POSH & POCSO Acts
- MoE, NCPCR and NDMA guidelines for school safety and security
- Constitutional Provisions for PwD, EWS, SC/ST and other disadvantaged groups
- General Financial Rules – 2017
- CCS(Pension) Rule 2021, NPS
- Human Rights.

Sets:

Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets. Subsets of a set of real numbers especially intervals (with notations). Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement.

Relations & Functions:

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (upto $R \times R \times R$). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions.

Trigonometric Functions

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2x + \cos^2x = 1$, for all x . Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing $\sin(x \pm y)$ and $\cos(x \pm y)$ in terms of $\sin x$, $\sin y$, $\cos x$ & $\cos y$ and their simple applications. Identities related to $\sin 2x$, $\cos 2x$, $\tan 2x$, $\sin 3x$, $\cos 3x$ and $\tan 3x$.

Complex Numbers and Quadratic Equations

Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane

Linear Inequalities

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line.

Permutations and Combinations

Fundamental principle of counting. Factorial n . $(n!)$ Permutations and combinations, derivation of Formulae for nPr and nCr and their connections, simple applications.

Binomial Theorem

Historical perspective, statement and proof of the binomial theorem for positive integral indices.

Pascal's triangle, simple applications.

Sequence and Series

Sequence and Series. Arithmetic Progression (A. P.). Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M.

Straight Lines

Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form. Distance of a point from a line.

Conic Sections

Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

Introduction to Three-dimensional Geometry

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance

between two points.

Limits and Derivatives

Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions. Definition of derivative relate it to slope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

Statistics

Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data.

Probability

Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with other theories of earlier classes. Probability of an event, probability of 'not', 'and' and 'or' events.

Relations and Functions

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions.

Inverse Trigonometric Functions

Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.

Matrices

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. On commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).

Determinants

Determinant of a square matrix (up to 3×3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

Continuity and Differentiability

Continuity and differentiability, derivative of composite functions, chain rule, derivative of inverse trigonometric functions, derivative of implicit functions. Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives.

Applications of Derivatives

Applications of derivatives: rate of change of bodies, increasing/decreasing functions, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).

Integrals

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}$$

$$\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2} dx, \int \sqrt{x^2 - a^2} dx$$

$$\int \sqrt{ax^2 + bx + c} dx.$$

Fundamental Theorem of Calculus. Basic Properties of definite integrals and evaluation of definite integrals;

Applications of the Integrals

Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)

Differential Equations

Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type: $dy/dx + py = q$, where p and q are functions of x or constants. $dx/dy + px = q$, where p and q are functions of y or constants.

Vectors

Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors.

Three - dimensional Geometry

Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines.

Linear Programming

Introduction, related terminology such as constraints, objective function, optimization, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

Probability

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean of random variable.

Syllabus -PGT (Physics)

Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units, significant figures. Dimensions of physical quantities, dimensional analysis and its applications.

Motion in a Straight Line

Frame of reference, Motion in a straight line, Elementary concepts of differentiation and integration for describing motion, uniform and non-uniform motion, and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs, Relations for uniformly accelerated motion.

Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors. Motion in a plane, cases of uniform velocity and uniform acceleration, projectile motion, uniform circular motion.

Laws of Motion:

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion- vehicle on a level circular road, vehicle on a banked road.

Work, Energy and Power:

Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power, Notion of potential energy, potential energy of a spring, conservative forces: non-conservative forces, motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.

Motion of System of Particles and Rigid Body & System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and Centre of mass motion, Centre of mass of a rigid body; centre of mass of a uniform rod, Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications, Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects.

Gravitation:

Kepler's laws of planetary motion, universal law of gravitation, Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite.

Mechanical Properties of Solids

Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity, Poisson's ratio; elastic energy.

Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications -hydraulic lift and hydraulic brakes, effect of gravity on fluid pressure, Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its simple applications, Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Thermal Properties of Matter

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; C_p , C_v - calorimetry; change of state - latent heat capacity. Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law.

Thermodynamics

Thermal equilibrium and definition of temperature, zeroth law of thermodynamics, heat, work and internal energy, First law of thermodynamics, Second law of thermodynamics: gaseous state of matter, change of condition of gaseous state -isothermal, adiabatic, reversible, irreversible, and cyclic processes.

Behavior of Perfect Gases and Kinetic Theory of Gases :

Equation of state of a perfect gas, work done in compressing a gas, Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Oscillations and Waves:

Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their application, Simple harmonic motion (S.H.M) and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum -its time period. Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats.

Electric Charges and Fields:

Electric charges, Conservation of charge, Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution, Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell-field inside and outside.

Magnetism and Matter

Bar magnet, bar magnet as an equivalent solenoid (qualitative treatment only), magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis (qualitative treatment only), torque on a magnetic dipole (bar magnet) in a uniform magnetic field (qualitative treatment only), magnetic field lines. Magnetic properties of materials- Para-, dia- and ferro - magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties.

Electromagnetic Induction and Alternating Currents

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction, Alternating Current Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LCR series circuit, resonance, power in AC circuits, power factor, wattless current, AC generator, Transformer.

Electromagnetic Waves

Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

Ray Optics and Optical Instruments Ray Optics:

Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism. Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Wave optics:

Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts, Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light, diffraction due to a single slit, width of central maxima.

Dual Nature of Radiation and Matter:

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light, Experimental study of photoelectric effect Matter waves-wave nature of particles, de-Broglie relation.

Atoms & Nuclei:

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom, Expression for radius of nth possible orbit, velocity and energy of electron in its orbit, hydrogen line spectra, Composition and size of nucleus, nuclear force Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

Semiconductor Electronics:

Energy bands in conductors, semiconductors and insulators, Intrinsic and extrinsic semiconductors- p and n type, p-n junction Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.

Syllabus -PGT (Chemistry)

Basic Concepts of Chemistry

General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

Structure of Atom

Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.

Classification of Elements and Periodicity in Properties

Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.

Chemical Bonding and Molecular Structure

Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), Hydrogen bond.

Chemical Thermodynamics

Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of ΔU & ΔH , Hess's law of constant heat summation, enthalpy of bond of dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics, Introduction of entropy as a state function, Gibb's energy change for spontaneous and nonspontaneous processes, criteria for equilibrium. Third law of thermodynamics.

Equilibrium

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).

Redox Reactions

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.

Organic Chemistry -Some Basic Principles and Techniques

General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a

covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation.

Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

Classification of Hydrocarbons

Aliphatic Hydrocarbons:

Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.

Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene. Carcinogenicity and toxicity.

Solutions

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.

Electrochemistry

Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.

Chemical Kinetics

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.

d and f Block Elements

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first-row transition metals - metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$. **Lanthanoids** - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences. **Actinoids** - Electronic configuration, oxidation states and comparison with lanthanoids.

Coordination Compounds

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

Haloalkanes and Haloarenes.

Haloalkanes: Nomenclature, nature of C-X bond, physical and chemical properties, optical rotation

mechanism of substitution reactions. **Haloarenes:** Nature of C-X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Alcohols, Phenols and Ethers

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol. **Phenols:** Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols. **Ethers:** Nomenclature, methods of preparation, physical and chemical properties, uses.

Aldehydes, Ketones and Carboxylic Acids

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses. **Carboxylic Acids:** Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Amines

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

Biomolecules

Carbohydrates - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates. **Proteins** -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure. **Vitamins** - Classification and functions. Nucleic Acids: DNA and RNA.

Syllabus -PGT (Biology)

The Living World

Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature

Biological Classification

Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

Plant Kingdom

Classification of plants into major groups; Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded – Angiosperms, Plant Life Cycle and Alternation of Generations)

Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and at a few examples of each category).

Morphology of Flowering Plants

Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of families: Solanaceae

Anatomy of Flowering Plants

Anatomy and functions of tissue systems in dicots and monocots.

Structural Organisation in Animals

Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog.

Cell-The Unit of Life

Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system- endoplasmic reticulum, ribosomes, golgi bodies, lysosomes, vacuoles; mitochondria, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.

Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzymes - properties, enzyme action.

Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Photosynthesis in Higher Plants

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.

Respiration in Plants

Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.

Plant - Growth and Development

Seed germination; phases of plant growth and plant growth rate; conditions for growth;

differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Breathing and Exchange of Gases

Introduction to respiratory organs in animals; Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volumes; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.

Body Fluids and Circulation

Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.

Excretory Products and their Elimination

Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system - structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH, diabetes insipidus; micturition; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

Locomotion and Movement

Types of movement - amoeboid, ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

Neuron and nerves; Nervous system in humans - central nervous system and peripheral nervous system; generation and conduction of nerve impulse; visceral nervous system.

Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, thymus, adrenal, pancreas, gonads; hormones of heart, kidney and gastrointestinal tract; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease.

Neural Control and Coordination

Sexual Reproduction in Flowering Plants

Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; outbreeding devices; pollen-pistil interaction; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; special modes - apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation.

Human Reproduction

Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation ; parturition ; lactation .

Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods; medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT

Principles of Inheritance and Variation

Heredity and variation, Mendelian inheritance; deviations from Mendelism - incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and

genes; linkage and crossing over; Sex determination - in human being, birds and honey bee; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans - thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

Molecular Basis of Inheritance

Structure of DNA and RNA; DNA packaging; Search for genetic material and DNA as genetic material; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Human genome project; DNA fingerprinting.

Evolution

Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); adaptive radiation; Darwin's theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; human evolution

Human Health and Diseases

Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.

Biotechnology - Principles and Processes

Genetic Engineering (Recombinant DNA Technology).

Biotechnology and its Application

Application of biotechnology in health and agriculture: genetically modified organisms - Bt crops; Human insulin, gene therapy; molecular diagnosis; transgenic animals; biosafety issues, biopiracy and patents.

Organisms and Populations

Population interactions - mutualism, competition, predation, parasitism, commensalism; population attributes - growth, birth rate and death rate, age distribution.

Ecosystem

Ecosystem, productivity and decomposition; energy flow; pyramids of number, biomass, energy.

Biodiversity and Conservation

Biodiversity - Concept, levels, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.

Syllabus – PGT (Economics)

Introduction

Meaning, scope, functions and importance of statistics in Economics

Collection, Organisation and Presentation of data

- Collection of data - sources of data - primary and secondary; how basic data is collected with concepts of Sampling; methods of collecting data; some important sources of secondary data: Census of India and National Sample Survey Organisation.
- Organisation of Data: Meaning and types of variables; Frequency Distribution.
- Presentation of Data: Tabular Presentation and Diagrammatic Presentation of Data: (i) Geometric forms (bar diagrams and pie diagrams), (ii) Frequency diagrams (histogram, polygon and Ogive) and (iii) Arithmetic line graphs (time series graph).

Statistical Tools and Interpretation

- Measures of Central Tendency- Arithmetic mean, median and mode
- Correlation – meaning and properties, scatter diagram; Measures of correlation - Karl Pearson's method (two variables ungrouped data) Spearman's rank correlation.
- Introduction to Index Numbers - meaning, types - wholesale price index, consumer price index and index of industrial production, uses of index numbers; Inflation and index numbers.

Introduction to Microeconomics

- Meaning of microeconomics and macroeconomics; positive and normative economics
- What is an economy? Central problems of an economy: what, how and for whom to produce; concepts of production possibility frontier and opportunity cost.

Consumer's Equilibrium and Demand

- Consumer's equilibrium - meaning of utility, marginal utility, law of diminishing marginal utility, conditions of consumer's equilibrium using marginal utility analysis.
- Indifference curve analysis of consumer's equilibrium-the consumer's budget (budget set and budget line), preferences of the consumer (indifference curve, indifference map) and conditions of consumer's equilibrium.
- Demand, market demand, determinants of demand, demand schedule, demand curve and its slope, movement along and shifts in the demand curve; price elasticity of demand - factors affecting price elasticity of demand; measurement of price elasticity of demand – percentage-change method and total expenditure method.

Producer Behaviour and Supply

- Meaning of Production Function – Short-Run and Long-Run
- Total Product, Average Product and Marginal Product.
- Returns to a Factor
- Cost: Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed cost, average variable cost and marginal cost-meaning and their relationships.
- Revenue - total, average and marginal revenue - meaning and their relationship.
- Producer's equilibrium-meaning and its conditions in terms of marginal revenue marginal cost. Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply - percentage-change method.

Forms of Market and Price Determination under Perfect Competition with simple applications.

- Perfect competition - Features; Determination of market equilibrium and effects of shifts in demand and supply.

- Simple Applications of Demand and Supply: Price ceiling, price floor.

National Income and Related Aggregates

- Basic concepts in macroeconomics: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation.
- Circular flow of income (two sector model); Methods of calculating National Income - Value Added or Product method, Expenditure method, Income method.
- Aggregates related to National Income: Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product (GDP) and Net Domestic Product (NDP) - at market price, at factor cost; Real and Nominal GDP.
- GDP and Welfare

Money and Banking

- Money – meaning and functions, supply of money - Currency held by the public and net demand deposits held by commercial banks.
- Money creation by the commercial banking system.
- Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Control of Credit through Bank Rate, CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Determination of Income and Employment

- Aggregate demand and its components.
- Propensity to consume and propensity to save (average and marginal).
- Short-run equilibrium output; investment multiplier and its mechanism.
- Meaning of full employment and involuntary unemployment.
- Problems of excess demand and deficient demand; measures to correct them - changes in government spending, taxes and money supply.

Government Budget and the Economy

- Government budget - meaning, objectives and components.
- Classification of receipts - revenue receipts and capital receipts;
- Classification of expenditure – revenue expenditure and capital expenditure.
- Balanced, Surplus and Deficit Budget – measures of government deficit.

Balance of Payments

- Balance of payments account - meaning and components;
- Balance of payments – Surplus and Deficit
- Foreign exchange rate - meaning of fixed and flexible rates and managed floating.
- Determination of exchange rate in a free market, Merits and demerits of flexible and fixed exchange rate. Managed Floating exchange rate system

Development Experience (1947-90) and Economic Reforms since 1991:

- A brief introduction of the state of Indian economy on the eve of independence. Indian economic system and common goals of Five Year Plans.
- Main features, problems and policies of agriculture (institutional aspects and new agricultural strategy), industry (IPR 1956; SSI – role & importance) and foreign trade.
- Economic Reforms since 1991:
Features and appraisals of liberalisation, globalisation and privatisation (LPG policy); Concepts of demonetization and GST

Current challenges facing Indian Economy

- Human Capital Formation: How people become resource; Role of human capital in economic development; Growth of Education Sector in India
- Rural development: Key issues - credit and marketing - role of cooperatives;

agricultural diversification; alternative farming - organic farming

- Employment: Growth and changes in work force participation rate in formal and informal sectors; problems and policies
- Sustainable Economic Development: Meaning, Effects of Economic Development on Resources and Environment, including global warming

Development Experience of India:

- A comparison with neighbours
- Issues: economic growth, population, sectoral development and other Human Development Indicators

Syllabus – PGT (Geography)

Geography as a Discipline

- Geography as an integrating discipline, as a science of spatial attributes
- Branches of Geography: Physical Geography and Human Geography

The Earth

- Origin and evolution of the earth
- Interior of the earth Earthquakes and volcanoes: causes, types and effects
- Distribution of oceans and continents : Wegener's continental drift theory and plate tectonics

Landforms

- Geomorphic processes: weathering; mass wasting; erosion and deposition; soil-formation
- Landforms and their evolution- Brief erosional and depositional features

Climate

- Atmosphere- composition and structure; elements of weather and climate
- Solar Radiation-Insolation-angle of incidence and distribution; heat budget of the earth-heating and cooling of atmosphere (conduction, convection, terrestrial radiation and advection); temperature- factors controlling temperature; distribution of temperature- horizontal and vertical; inversion of temperature
- Atmospheric circulation and weather systems - Pressure-pressure belts; winds-planetary, seasonal and local; air masses and fronts; tropical and extra tropical cyclones
- Water in the atmosphere-Precipitation- evaporation; condensation-dew, frost, fog, mist and cloud; rainfall-types and world distribution
- World Climate and Global Concerns

Water (Oceans)

- Basics of Oceanography
- Oceans - distribution of temperature and salinity
- Movements of ocean water-waves, tides and currents; submarine reliefs

Life on the Earth

- Biosphere - importance of plants and other organisms; biodiversity and conservation

India-Physical Environment

- India : Location, space relations, India's place in the world

Physiography

- Structure and Relief; Physiographic Divisions
- Drainage systems: Concept of river basins, watershed; the Himalayan and the Peninsular rivers

Climate, Vegetation and Soil

- Weather and climate - spatial and temporal distribution of temperature, Indian monsoon: mechanism, onset and withdrawal
- Natural vegetation-forest types and distribution; wild life; conservation; biosphere reserves

Hazards and Disasters: Causes, Consequences and Management

- Floods, Cloudbursts
- Droughts: types and impact
- Earthquakes and Tsunami Cyclones: features and impact

- Landslides

Fundamentals of Maps

- Geo spatial data, Concept of Geographical data matrix; Point, line, area data
- Maps - types; scales-types; construction of simple linear scale, measuring distance; finding direction and use of symbols
- Map projection- Latitude, longitude and time, typology, construction and properties of projection: Conical with one standard parallel and Mercator's projection.

Topographic and Weather Maps

- Study of topographic maps (1 : 50,000 or 1 : 25,000 Survey of India maps); contour cross section and identification of landforms-slopes, hills, valleys, waterfall, cliffs; distribution of settlements
- Satellite imageries, stages in remote sensing data- acquisition, platform and sensors and data products, (photographic and digital)

People

- The World Population- distribution, density and growth
- Population change - Components of population change, Demographic Transition
- Human development-concept; selected indicators, international comparisons
- Population: distribution, density and growth; composition of population - linguistic, religious; sex, rural-urban and occupational-regional variations in growth of population

Human Activities

- Primary activities - concept and changing trends; gathering, pastoral, mining, subsistence agriculture, modern agriculture; people engaged in agricultural and allied activities - some examples from selected countries
- Secondary activities- concept; manufacturing: types - household, small scale, large scale; agro based and mineral based industries;
- Tertiary activities - concept; trade, transport and tourism; services; people engaged in tertiary activities
- Quaternary activities- concept; people engaged in quaternary activities - case study from selected countries

Human Settlements

- Rural settlements - types and distribution
- Urban settlements - types, distribution and functional classification

Transport, Communication and Trade

- Land transport - roads, railways; trans- continental railways Water transport- inland waterways; major ocean routes
- Air transport- Intercontinental air routes Oil and gas pipelines
- Satellite communication and cyber space- importance and usage for geographical information; use of GPS
- International trade- bases and changing patterns; ports as gateways of international trade; role of WTO in international trade

Resources and Development

- Land resources- general land use; agricultural land use; geographical conditions and distribution of major crops (Wheat, Rice, Tea, Coffee, Cotton, Jute, Sugarcane and Rubber); agricultural development and problems
- Water resources-availability and utilization- irrigation, domestic, industrial and other uses; scarcity of water and conservation methods-rain water harvesting and watershed management

- Mineral and energy resources- distribution of metallic (Iron ore, Copper, Bauxite, Manganese); non-metallic (Mica, Salt) minerals; conventional (Coal, Petroleum, Natural gas and Hydroelectricity) and non-conventional energy sources (solar, wind, biogas) and conservation
- Planning in India- target group area planning(case study); idea of sustainable development (case study)

Transport, Communication and International Trade

- Transport and communication-roads, railways, waterways and airways: oil and gas pipelines; Geographical information and communication net works
- International trade- changing pattern of India's foreign trade; sea ports and their hinterland and airports

Geographical Perspective on selected issues and problems

- Environmental pollution; urban-waste disposal
- Urbanization, rural-urban migration; problems of slums
- Land degradation

Syllabus - PGT (History)

Writing and City Life

Iraq, 3rd millennium BCE

- Growth of towns
- Nature of early urban societies
- Historians' Debate on uses of writing

An Empire across Three Continents

Roman Empire, 27 BCE to 600 CE

- Political evolution
- Economic Expansion
- Religion-culture foundation
- Late Antiquity
- Historians' view on the Institution of Slavery

NOMADIC EMPIRES

The Mongol, 13th to 14th century

- The nature of nomadism
- Formation of empires
- Conquests and relations with other states
- Historians' views on nomadic societies and state formation

The Three Orders.

Western Europe 13th - 16th century

- Feudal society and economy
- Formation of state
- Church and society
- Historians' views on decline of feudalism

Changing Cultural Traditions

Europe 14th -17th century

- New ideas and new trends in literature and arts
- Relationship with earlier ideas
- The contribution of West Asia
- Historians' viewpoint on the validity of the notion 'European Renaissance'

Displacing Indigenous People

North America and Australia, 18th to 20th century

- European colonists in North America and Australia
- Formation of White Settler societies
- Displacement and repression of local people
- Historians' viewpoint on the impact of European settlement on indigenous population

Paths to Modernization

East Asia, late 19th to 20th century

- Militarization and economic growth in Japan
- China and the communist alternative
- Historians' Debate on the meaning of modernization

BRICKS, BEADS AND BONES

The Harappan Civilization

- Broad overview: Early urban centers
- Story of discovery: Harappan civilization
- Excerpt: Archaeological report on a major site

KINGS, FARMERS AND TOWNS:

- Early States and Economies (c. 600 BCE-600 CE)
- Broad overview: Political and economic History from the Mauryan to the Gupta period
- Story of discovery: Inscriptions and the Decipherment of the script. Shifts in the Understanding of political and economic history.
- Excerpt: Ashokan inscription and Gupta period land grant

KINSHIP, CASTE AND CLASS

Early Society Societies (C. 600 BCE-600 CE)

- Broad overview: Social Histories: Using the Mahabharata
- Issues in social history, including caste, class, kinship and gender
- Story of discovery: Transmission and publications of the Mahabharat
- Excerpt: from the Mahabharata, illustrating how it has been used by historians.

THINKERS, BELIEFS AND BUILDINGS

Cultural Developments (c. 600 BCE - 600 CE)

- Broad overview: A History of Buddhism: Sanchi Stupa a) A brief review of religious histories of Vedic religion, Jainism, Vaishnavism, Shaivism (Puranic Hinduism) b) Focus on Buddhism.
- Story of discovery: Sanchi stupa. Excerpt: Reproduction of sculptures from Sanchi.

THROUGH THE EYES OF TRAVELLERS

Perceptions of Society (tenth to seventeenth century)

- Broad Overview: outlines of social and cultural life as they appear in traveller's account.
- Story of their writings: A discussion of where they travelled, what they wrote and for whom they wrote.
- Excerpts: from Al Biruni, Ibn Battuta, Francois Bernier.

BHAKTI –SUFİ TRADITIONS:

Changes in Religious Beliefs and Devotional Texts (eighth to eighteenth centuries)

- Broad overview: a. Outline of religious developments during this period saints. b. Ideas and practices of the Bhakti-Sufi
- Story of Transmission: How Bhakti-Sufi compositions have been preserved.
- Excerpt: Extracts from selected Bhakti-Sufi works

AN IMPERIAL CAPITAL: VIJAYANAGARA(fourteenth to sixteenth centuries)

- Broad Over View: New Architecture: Hampi a. Outline of new buildings during Vijayanagar period-temples, forts, irrigation facilities. b. Relationship between architecture and the political system
- Story of Discovery: Account of how Hampi was found.
- Excerpt: Visuals of buildings at Hampi

PEASANTS, ZAMINDARS AND THE STATE:

Agrarian Society and the Mughal Empire (c. sixteenth-seventeenth centuries)

- Broad overview: The Aini-Akbari a. Structure of agrarian relations in the 16th and 17th centuries. b. Patterns of change over the period.
- Story of Discovery: Account of the compilation and translation of Ain I Akbari
- Excerpt: from the Ain-i-Akbari.

COLONIALISM AND THE COUNTRYSIDE: Exploring Official Archives

- Broad overview: Colonialism and Rural Society: Evidence from Official Reports
 - a) Life of zamindars, peasants and artisans in the late 18th century
 - b). Permanent Settlement, Santhals and Paharias
- Story of official records: An account of why official investigations in to rural societies were undertaken and the types of records and reports produced.
- Excerpts: From Fifth Report

REBELS AND THE RAJ: 1857 Revolt and its Representations

- Broad overview:
 - a. The events of 1857-58.
 - b. Vision of Unity
 - c. How these events were recorded and narrated. Focus: Lucknow
- Excerpts: Pictures of 1857.
- Extracts from contemporary accounts.

MAHATMA GANDHI AND THE NATIONALIST MOVEMENT:

- Civil Disobedience and Beyond Broad overview:
 - a. The Nationalist Movement 1918 -48.
 - b. The nature of Gandhian politics and leadership.
- Focus: Mahatma Gandhi and the three movements and his last days as "finest hours"
- Excerpts: Reports from English and Indian language newspapers and other contemporary writings.

FRAMING THE CONSTITUTION:

- The Beginning of a New Era Broad overview: The Making of the Constitution an overview:
 - a. Independence and then new nation state.
 - b. The making of the Constitution
- Focus: The Constituent Assembly Debates
- Excerpts: from the debates

Syllabus –PGT (Computer Science)

Computer Systems and Organisation

- Basic Computer Organisation : Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB)
- Types of software: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software
- Operating system (OS): functions of operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic circuits
- Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
- Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF32)

Computational Thinking and Programming

- Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, decomposition
- Familiarization with the basics of Python programming: Introduction to Python, features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments
- Knowledge of data types: number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types
- Operators: arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators (is, is not), membership operators (in, not in)
- Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output
- Errors: syntax errors, logical errors, runtime errors
- Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number
- Iterative statements: for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc
- Strings: introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()
- Lists: introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list
- Tuples: introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of

elements in a tuple

- Dictionary: introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del(), clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); suggested programs : count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them
- Introduction to Python modules: Importing module using 'import ' and using from statement, Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean, median, mode)

Society, Law and Ethics

- Digital Footprints
- Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
- Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
- Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
- Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying.
- Safely accessing web sites: malware, viruses, trojans, adware
- E-waste management: proper disposal of used electronic gadgets
- Indian Information Technology Act (IT Act)
- Technology & Society: Gender and disability issues while teaching and using computers

Computational Thinking and Programming – 2

- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
- Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths
- Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file
- Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file
- CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader()

Computer Networks

- Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)
- Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)
- Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)
- Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)
- Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN),

networking topologies (Bus, Star, Tree)

- Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP, wireless/mobile communication protocol such as GSM, GPRS and WLL
- Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

Database Management

- Database concepts: introduction to database concepts and its need
- Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count), group by, having clause, joins: cartesian product on two tables, equi-join and natural join
- Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications

Introduction to Computer System

- Introduction to computers and computing: evolution of computing devices, components of a computer system and their interconnections, Input/Output devices.
 - Computer Memory: Units of memory, types of memory – primary and secondary, data deletion, its recovery and related security concerns. Software: purpose and types – system and application software, generic and specific purpose software.

Introduction to Python

- Basics of Python programming, Python interpreter - interactive and script mode, the structure of a program, indentation, identifiers, keywords, constants, variables, types of operators, precedence of operators, data types, mutable and immutable data types, statements, expressions, evaluation of expressions, comments, input and output statements, data type conversion, debugging, control statements: if-else, for loop Lists: list operations - creating, initializing, traversing and manipulating lists, list methods and built-in functions.: len(), list(), append(), extend(), insert(), count(), find(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum()
- Dictionary: concept of key-value pair, creating, initializing, traversing, updating and deleting elements, dictionary methods and built-in functions: len(), dict(), keys(), values(), items(), get(), update(), clear(), del()

Database concepts and the Structured Query Language

- Database Concepts: Introduction to database concepts and its need, Database Management System. Relational data model: concept of attribute, domain, tuple, relation, candidate key, primary key, alternate key, foreign key.
- Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, creating a database using MySQL, Data Types
- Definition Commands: CREATE TABLE
- Data Query Commands: SELECT-FROM- WHERE
- Data Manipulation Commands: INSERT

Emerging Trends

Artificial Intelligence, Machine Learning, Natural Language Processing, Immersive experience (AR, VR), Robotics, Big data and its characteristics, Internet of Things (IoT), Sensors, Smart cities, Cloud Computing and Cloud Services (SaaS, IaaS, PaaS); Grid Computing, Block chain technology.

Data Handling using Pandas

- Introduction to Python libraries- Pandas, Matplotlib.
- Data structures in Pandas - Series and Data Frames.
- Series: Creation of Series from – ndarray, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing and Slicing.
- Data Frames: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing;
- Importing/Exporting Data between CSV files and Data Frames.
- Data Visualization Purpose of plotting; drawing and saving following types of plots using Matplotlib – line plot, bar graph, histogram Customizing plots: adding label, title, and legend in plots

Database Query using SQL

- Math functions: POWER (), ROUND (), MOD ().
- Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
- Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().
- Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*).
- Querying and manipulating data using Group by, Having, Order by.

Introduction to Computer Networks

- Introduction to networks, Types of network: LAN, MAN, WAN.
- Network Devices: modem, hub, switch, repeater, router, gateway
- Network Topologies: Star, Bus, Tree, Mesh.
- Introduction to Internet, URL, WWW, and its applications- Web, email, Chat, VoIP.
- Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website.
- Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.

Societal Impacts

- Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.
- E-waste: hazards and management.
- Awareness about health concerns related to the usage of technology.

Syllabus - PGT (Commerce)

Accountancy

Introduction to Accounting

- Accounting- concept, meaning, as a source of information objectives, advantages and limitations, types of accounting information; users of accounting information and their needs. Qualitative Characteristics of Accounting Information. Role of Accounting in Business.
- Basic Accounting Terms- Business Transaction, entity, Capital, Drawings. Liabilities (Non Current and Current). Assets (Non Current, Current); Fixed assets (Tangible and Intangible), Expenditure (Capital and Revenue), Expense, Revenue, Income, Profit, Gain, Loss, Purchase, Sales, Goods, Stock, Debtor, Creditor, Voucher, Discount (Trade discount and Cash Discount)

Theory Base of Accounting

- Fundamental accounting assumptions: GAAP: Concept
- Business Entity, Money Measurement, Going Concern, Accounting Period, Cost Concept, Dual Aspect, Revenue Recognition, Matching, Full Disclosure, Consistency, Conservatism, Materiality and Objectivity System of Accounting. Basis of Accounting: cash basis and accrual basis
- Accounting Standards: Applicability of IndAS
- Goods and Services Tax (GST): Characteristics and Advantages.

Recording of Business Transactions

- Voucher and Transactions: Source documents and Vouchers, Preparation of Vouchers, Accounting Equation Approach: Meaning and Analysis, Rules of Debit and Credit.
- Recording of Transactions: Books of Original Entry- Journal
- Special Purpose books
- Cash Book: Simple, cash book with bank column and petty cashbook
- Purchases book
- Sales book
- Purchases return book
- Sales return book
- Journal Proper
- Ledger: Format, Posting from journal and subsidiary books, Balancing of accounts
- Bank Reconciliation Statement:
 - Need and preparation, Bank Reconciliation, Statement with Adjusted Cash Book
- Depreciation, Provisions and Reserves
 - Depreciation: Meaning, Features, Need, Causes, factors
 - Other similar terms: Depletion and Amortisation
 - Methods of Depreciation: i. Straight Line Method (SLM)
ii. Written Down Value Method (WDV)
- Difference between SLM and WDV;
- Advantages of SLM and WDV Accounting treatment of depreciation
 - i. Charging to asset account
 - ii. Creating provision for depreciation/accumulated depreciation account
 - iii. Treatment for disposal of asset
- Provisions and Reserves: Difference
- Types of Reserves: i. Revenue reserve ii. Capital reserve iii. General reserve iv. Specific reserve v. Secret Reserve

- Difference between capital and revenue reserve

Trial balance and Rectification of Errors

- Trial balance: objectives and meaning & preparation
- Errors: types-errors of omission, commission, principles, and compensating; their effect on Trial Balance. Detection and rectification of errors; preparation of suspense account.

Financial Accounting – II

- Financial Statements Meaning, objectives, and importance; Revenue and Capital Receipts; Revenue and Capital Expenditure;
- Deferred Revenue expenditure.
- Trading and Profit and Loss Account: Gross Profit, Operating profit and Net profit. Preparation.
- Balance Sheet: need, grouping and marshalling of assets and liabilities. Preparation.
- Adjustments in preparation of financial statements with respect to closing stock, outstanding expenses, prepaid expenses, accrued income, income received in advance, depreciation, bad debts, provision for doubtful debts, provision for discount on debtors, Abnormal loss, Goods taken for personal use/staff welfare, interest on capital and managers commission.
- Preparation of Trading and Profit and Loss account and Balance Sheet of a sole proprietorship with adjustments.

Accounting for Partnership Firms

- Partnership: features, Partnership Deed. Provisions of the Indian Partnership Act 1932 in the absence of partnership deed.
- Fixed v/s fluctuating capital accounts. Preparation of Profit and Loss Appropriation account- division of profit among partners, guarantee of profits.
- Past adjustments (relating to interest on capital, interest on drawing, salary and profit sharing ratio). Goodwill: meaning, nature, need, factors affecting and methods of valuation - average profit, super profit and capitalization.

Accounting for Partnership firms - Reconstitution and Dissolution.

- Change in the Profit Sharing Ratio among the existing partners - sacrificing ratio, gaining ratio, accounting for revaluation of assets and reassessment of liabilities and treatment of reserves, accumulated profits and losses. Preparation of revaluation account and balance sheet.
- Admission of a partner - effect of admission of a partner on change in the profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, treatment of reserves, accumulated profits and losses, adjustment of capital accounts and preparation of capital, current account and balance sheet.

Retirement and death of a partner

- effect of retirement / death of a partner on change in profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, adjustment of accumulated profits, losses and reserves, adjustment of capital accounts and preparation of capital, current account and balance sheet. Preparation of loan account of the retiring partner.
- Calculation of deceased partner's share of profit till the date of death. Preparation of deceased partner's capital account and his executor's account.

Dissolution of a partnership firm:

- Meaning of dissolution of partnership and partnership firm, types of dissolution of a firm. Settlement of accounts - preparation of realization account, and other related accounts: capital accounts of partners and cash/bank a/c (excluding piecemeal distribution, sale to a company and insolvency of partner(s)).

Accounting for Share Capital

- Features and types of companies
- Share and share capital: nature and types.
- Accounting for share capital: issue and allotment of equity and preferences shares. Public subscription of shares - over subscription and under subscription of shares; issue at par and at premium, calls in advance and arrears (excluding interest), issue of shares for consideration other than cash.
- Concept of Private Placement and Employee Stock Option Plan (ESOP), Sweat Equity.
- Accounting treatment of forfeiture and reissue of shares. Disclosure of share capital in the Balance Sheet of a company.

Accounting for Debentures

- Debentures: Meaning, types, Issue of debentures at par, at a premium and at a discount. Issue of debentures for consideration other than cash; Issue of debentures with terms of redemption; debentures as collateral security-concept, interest on debentures. Writing off discount / loss on issue of debentures.

Financial statements of a Company:

- Meaning, Nature, Uses and importance of financial Statement.
- Statement of Profit and Loss and Balance Sheet in prescribed form with major headings and sub headings (as per Schedule III to the Companies Act, 2013)
- Financial Statement Analysis: Meaning, Significance Objectives, importance and limitations.
- Tools for Financial Statement Analysis: Cash flow analysis, ratio analysis.
- Accounting Ratios: Meaning, Objectives, Advantages, classification and computation.
- Liquidity Ratios: Current ratio and Quick ratio.
- Solvency Ratios: Debt to Equity Ratio, Total Asset to Debt Ratio, Proprietary Ratio and Interest Coverage Ratio. Debt to Capital Employed Ratio.
- Activity Ratios: Inventory Turnover Ratio, Trade Receivables Turnover Ratio, Trade Payables Turnover Ratio, Fixed Asset Turnover Ratio, Net Asset Turnover Ratio and Working Capital Turnover Ratio.
- Profitability Ratios: Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio and Return on Investment.

Cash Flow Statement

- Meaning, objectives Benefits, Cash and Cash Equivalents, Classification of Activities and preparation

Business Studies

Foundation of Business

- Meaning and features

Evolution and Fundamentals of Business

History of Trade and Commerce in India: Indigenous Banking System, Rise of Intermediaries, Transport, Trading Communities: Merchant Corporations, Major Trade Centres, Major Imports and Exports, Position of Indian Sub-Continent in the World Economy. Business-meaning and Characteristics, Business- profession and employment-Concept, Objectives of business Classification of business activities - Industry and Commerce, Industry-types: primary, secondary, tertiary Meaning and subgroups, Commerce-trade: (types-internal, external; wholesale and retail) and auxiliaries to trade; (banking, insurance, transportation, warehousing, communication, and advertising) - meaning, Business risk-Concept

Forms of Business organizations

Sole Proprietorship-Concept, merits and limitations, Partnership-Concept, types, merits and

limitation of partnership, registration of a partnership firm, partnership deed. Types of partners. Hindu Undivided Family Business: Concept. Cooperative Societies-Concept, merits, and limitations. Company - Concept, merits and limitations; Types: Private, Public and One Person Company - Concept. Formation of company - stages, important documents to be used in formation of a company. Choice of form of business organization

Public, Private and Global Enterprises

Public sector and private sector enterprises – Concept. Forms of public sector enterprises: Departmental Undertakings, Statutory. Corporations and Government Company. Global Enterprises – Feature. Public private partnership – concept

Business Services

Business services – meaning and types. Banking: Types of bank accounts - savings, current, recurring, fixed deposit and multiple option deposit account. Banking services with particular reference to Bank Draft, Bank Overdraft, Cash credit. E-Banking meaning, Types of digital payments. Insurance – Principles. Types – life, health, fire and marine insurance – concept. Postal Service-Mail, Registered Post, parcel, Speed Post, Courier-meaning

Emerging Modes of Business

E-business: concept, scope and benefits

Social Responsibility of Business and Business Ethics

Concept of social responsibility. Case of social responsibility. Responsibility towards owners, investors, consumers, employees, government and community. Role of business in environment protection. Business Ethics - Concept and Elements.

Finance and Trade-Sources of Business Finance

Concept of business finance. Owners' funds- equity shares, preference share, retained earnings. Borrowed funds: debentures and bonds, loan from financial institution and commercial banks, public deposits, trade credit, Inter Corporate Deposits (ICD).

Small Business and Enterprises

Entrepreneurship Development (ED): Concept, Characteristics and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund start-up. Intellectual Property Rights and Entrepreneurship. Small scale enterprise as defined by MSMED Act 2006 (Micro, Small and Medium Enterprise Development Act). Role of small business in India with special reference to rural areas. Government schemes and agencies for small scale industries: National Small Industries Corporation (NSIC) and District Industrial Centre (DIC) with special reference to rural, backward areas.

Internal Trade

Internal trade - meaning and types services rendered by a wholesaler and a retailer. Types of retail-trade-Itinerant and small scale fixed shops retailers. Large scale retailers- Departmental stores, chain stores – concept. GST (Goods and Services Tax): Concept and key-features.

International trade:

Concept and benefits. Export trade – Meaning and procedure. Import Trade - Meaning and procedure. Documents involved in International Trade; indent, letter of credit, shipping order, shipping bills, mate's receipt (DA/DP). World Trade Organization (WTO) meaning and objectives.

Nature and Significance of Management

Management - concept, objectives, and importance. Management as Science, Art and Profession. Levels of Management. Management functions-planning, organizing, staffing, directing and controlling. Coordination- concept and importance.

Principles of Management

Principles of Management- concept and significance. Fayol's principles of management. Taylor's Scientific management- principles and techniques.

Business Environment

Business Environment- concept and importance Dimensions of Business Environment- Economic, Social, Technological, Political and Legal. Demonetization - concept and features.

Planning

Concept, importance and limitation. Planning process. Single use and standing plans. Objectives, Strategy, Policy, Procedure, method Rule, budget and Programme.

Organising

Concept and importance. Organising Process. Structure of organisation- functional and divisional concept. Formal and informal organisation- concept. Delegation: concept, elements and importance. Decentralization: concept and importance.

Staffing

Concept and importance of staffing. Staffing as a part of Human Resource Management concept. Staffing process. Recruitment process. Selection - process. Training and Development - Concept and importance, Methods of training - on the job and off the job - vestibule training, apprenticeship training and internship training.

Directing

Concept and importance. Elements of Directing. Motivation - concept, Maslow's hierarchy of needs, Financial and non-financial incentives. Leadership - concept, styles - authoritative, democratic and laissez faire. Communication - concept, formal and informal communication; barriers to effective communication, how to overcome the barriers.

Controlling

Controlling - Concept and importance. Relationship between planning and controlling. Steps in process of control.

Financial Management

Concept, role and objectives of Financial Management. Financial decisions: investment, financing and dividend- Meaning and factors affecting. Financial Planning - concept and importance. Capital Structure - concept and factors affecting capital structure. Fixed and Working Capital - Concept and factors affecting their requirements.

Financial Markets

Financial Markets: Concept. Money Market: Concept. Capital market and its types (primary and secondary). Stock Exchange - Functions and trading procedure. Securities and Exchange Board of India (SEBI)-objectives and functions

Marketing

Marketing - Concept, functions and philosophies. Marketing Mix - Concept and elements. Product - branding, labelling and packaging - Concept. Price - Concept, Factors determining price. Physical Distribution - concept, components and channels of distribution. Promotion - Concept and elements; Advertising, Personal Selling, Sales Promotion and Public Relations

Consumer Protection

Concept and importance of consumer protection. The Consumer Protection Act, 2019: Meaning of consumer. Rights and responsibilities of consumers Who can file a complaint? Redressal machinery Remedies available. Consumer awareness - Role of consumer organizations and Non-Governmental Organizations (NGOs)

SYLLABUS FOR PGT (ENGLISH)

Section A: Reading

Comprehension

Three or four unseen passages from different genres (prose, poetry, drama, articles, editorials, scientific, and literary extracts).

Questions will test comprehension, inference, vocabulary, tone, rhetorical devices, and logical sequencing.

Section B: Writing Ability

B1. Functional Writing:

Formal and Informal Letters: Business letters, job applications, letters to editors, complaints, and personal letters.

Report Writing: Factual description of events, newspaper reports, and analytical reports. Notices, Circulars, and Press Releases.

B2. Creative and Analytical Writing:

Essay Writing: Argumentative, analytical, reflective, and descriptive essays.

Article/Debate/Speech: Expressing opinions on socio-political, economic, and educational issues.

Section C: Grammar and Usage

Parts of Speech: Nouns, Pronouns, Verbs, Adverbs, Adjectives, Prepositions, Conjunctions. Sentence Structure : Types of sentences, subject-verb agreement, parallelism, and sentence connectors.

Tenses and Their Usage: Active-passive voice, sequence of tenses, and reported speech. Clauses: Noun, adjective, and adverb clauses.

Common Errors: Articles, prepositions, modifiers, redundancy, and word order.

Editing and Proofreading: Error detection, sentence correction, and transformation.

Section D: Literature

D1. British Literature:

Elizabethan and Jacobean Drama: William Shakespeare, Christopher Marlowe, Ben Jonson. Poetry: John Donne, Alexander Pope, William Wordsworth, Samuel Taylor Coleridge, John Keats.

Victorian and Modern Writers: Charles Dickens, Thomas Hardy, Virginia Woolf, T.S. Eliot, George Orwell.

D2. American Literature:

Poets: Robert Frost, Emily Dickinson, Langston Hughes.

Prose and Drama: Arthur Miller, Ernest Hemingway, Mark Twain, Harper Lee.

D3. Indian Writing in English:

R.K. Narayan, Mulk Raj Anand, Anita Desai, Vikram Seth, Arundhati Roy, Amitav Ghosh.

D4. World Literature:

Gabriel García Márquez, Chinua Achebe, Pablo Neruda, Khaled Hosseini.

D5. Literary Criticism and Movements:

Classicism, Romanticism, Modernism, Postmodernism, Feminism, Post colonialism, Structuralism.

पाठ्यक्रम स्नातकोत्तर शिक्षक (हिन्दी)

साहित्यिक अभिरुचि परीक्षण

(i) आदिकाल से रीतिकाल

इसके अन्तर्गत कालगत परिस्थितियाँ एवं साहित्य पर उसका प्रभाव, प्रत्येक युग के साहित्य की प्रमुख प्रवृत्तियाँ, प्रमुख रचनाकार एवं उनकी रचनाएँ, साहित्यिक विशेषताएँ, भाषा शैली

(क) आदिकाल - चंदबरदाई, अमीर खुसरो, विद्यापति

(ख) भक्तिकाल - - -

(1) निर्गुण भक्तिधारा - ज्ञानमार्गी शाखा, प्रेममार्गी शाखा, कबीर, दादू, रैदास, नानक, जायसी, कुतुबन

(2) सगुण भक्तिधारा - राम भक्तिशाखा, कृष्ण-भक्ति शाखा, तुलसीदास, केशव, सूरदास, मीराबाई, अष्टछाप के कवि, रसखान

(ग) रीतिकाल - रीतिबद्ध, रीतिसिद्ध, रीतिमुक्त काव्य - देव, घनानंद, बिहारी, मतिराम, सेनापति, भूषण, पद्माकर

(ii) आधुनिक काल

इसके अन्तर्गत युगीन परिस्थितियाँ, साहित्यिक पृष्ठभूमि, मुख्य विचारधारा, मुख्य साहित्यकार, साहित्यिक रचनाएँ, विशेषताएँ, भाषा-शैली

(क) भारतेन्दु युग- भारतेन्दु हरिश्चंद्र, बालमुकुन्दगुप्त, बदरीनारायण चौधरी 'प्रेमधन,

(ख) द्विवेदीयुग- महावीर प्रसाद द्विवेदी, श्रीधर पाठक, अयोध्यासिंह उपाध्याय 'हरिऔध', मैथिलीशरणगुप्त

(ग) छायावाद - जयशंकर प्रसाद, महादेवी वर्मा, सुमित्रानन्दन पंत, सूर्यकान्त त्रिपाठी निराला,

(घ) छायावादोत्तर युग- हरिवंश राय बच्चन, माखनलाल चतुर्वेदी, बालकृष्ण शर्मा 'नवीन', नरेन्द्र शर्मा, केदारनाथ अग्रवाल, नागार्जुन, मुक्तिबोध, नेमिचंद्र जैन, प्रभाकर माचवे, गिरिजा कुमार माथुर, रामविलास शर्मा, 'अज्ञेय' भवानी प्रसाद मिश्र, नरेन्द्र शर्मा, धूमिल, धर्मवीर भारती, शंभुनाथ सिंह, रघुवीर सहाय

(iii) गद्य साहित्य

(i) अधोलिखित लेखकों का व्यक्तित्व और कृतित्व-

भारतेन्दु, रामचंद्र शुक्ल, प्रेमचंद, जैनेन्द्र कुमार, हजारीप्रसाद द्विवेदी, धर्मवीर भारती, रामविलास शर्मा, निर्मल वर्मा, फणीश्वरनाथ रेणु, कृष्णा सोबती, भीष्म साहनी, शेखर जोशी, विष्णु खरे, ममता कालिया

(ख) गद्य एवं अन्य विधाओं का प्रारम्भ, विकास, प्रमुख प्रवृत्तियाँ, प्रमुख साहित्यकार, रचनाएँ, साहित्यिक विशेषताएँ, भाषाशैली

(ग) निबंध, कथासाहित्य, उपन्यास और कहानी, नाटक, एकांकी, रेखाचित्र, संस्मरण, यात्रा-वृतांत, आत्मकथा, जीवनी, पत्र, डायरी, आलोचना, रिपोर्ताज आदि इन सभी विधाओं का विस्तृत परिचय

(iv) साहित्य शास्त्र :-

काव्य स्वरूप, काव्य-आत्मा, काव्य गुण-दोष, शब्द-शक्ति, रस, अलंकार (शब्दालंकार, अर्थालंकार, उभयालंकार एवं नए अलंकार) बिंब, छंद, प्रतीक, भाषा, भाषा-शैली एवं पाश्चात्य काव्यशास्त्र

(v) हिंदी भाषा का क्रमिक विकास, हिंदी भाषा की बोलियाँ एवं उपबोलियों एवं उसकी विशेषताएँ एवं भाषा परिवार

(vi) अपठित बोध- अपठित गद्यांश / काव्यांश पर आधारित अर्थग्रहण, भाव-सौंदर्य, शिल्प-सौंदर्य सम्बंधी प्रश्न

व्याकरणिक प्रयोग परीक्षण

(i) वर्ण विचार -

- ❖ ध्वनियों का वर्गीकरण, वर्ण-वर्गीकरण, उच्चारण-स्थान
- ❖ वर्णमाला, वर्तनी, सन्धि/ सन्धिविच्छेद

(ii) शब्द - विचार एवं शब्द भंडार

- ❖ शब्द भेद - उत्पत्ति, रचना, रूप और अर्थ की दृष्टि से शब्द
- ❖ शब्द भंडार-पर्यायवाची, विपरीतार्थक, एकार्थी, अनेकार्थी, श्रुतिसम भिन्नार्थक शब्द
- ❖ शब्द-युग्म शब्द निर्माण - उपसर्ग, प्रत्यय, समास

(iii) पद-विचार, पदबंध, पद-परिचय

- ❖ संज्ञा, सर्वनाम, विशेषण, विशेष्य (परिभाषा, भेद, लिंग, वचन, कारक)
- ❖ क्रिया (परिभाषा, भेद, अकर्मक, सकर्मक, काल, संरचना की दृष्टि से क्रिया भेद, वाच्य, वाच्य भेद, वाच्य परिवर्तन),
- ❖ अव्यय (परिभाषा, भेद- क्रिया विशेषण, संबंधबोधक, समुच्चयबोधक, विस्मयादिबोधक - निपात)
- ❖ पदबंध - भेद एवं प्रयोग
- ❖ पद-परिचय

(iv) वाक्य- विचार

- ❖ वाक्य संरचना, वाक्य भेद - अर्थ एवं रचना की दृष्टि से
- ❖ वाक्य - परिवर्तन, वाक्य-संश्लेषण, वाक्य विश्लेषण

- ❖ विराम चिह्न, लोकोक्ति एवं मुहावरे

प्रयोजनमूलक हिंदी कौशल परीक्षण

- ❖ पत्रकारिता एवं उसके विविध आयाम
- ❖ प्रिंटमाध्यम - समाचार, संपादकीय, रिपोर्ट, आलेख, फीचर, साक्षात्कार आदि के लिए लेखन,
- ❖ रेडियो व दूरदर्शन के लिए लेखन,
- ❖ विज्ञापन लेखन, उद् घोषणा, स्वागत भाषण, संगोष्ठी संचालन आदि
- ❖ कहानी का कविता में रूपान्तरण, कविता, कहानी, लघुकथा, डायरी लेखन आदि
- ❖ कार्यालयी हिन्दी, कार्यसूची, कार्यवृत्त, प्रतिवेदन, सरकारी पत्र, सूचनाएं, निविदाएं आदि

व्यावहारिक लेखन

- ❖ व्यावहारिक हिन्दी का स्वरूप
- ❖ प्रयोजनमूलक हिन्दी और उसके विविध आयाम

सर्जनात्मक लेखन एवं मौलिक अभिव्यक्ति

- ❖ दिए गए विषय पर कविता, लघुकथा एवं रचनात्मक लेख संबंधी मौलिक रचना
- ❖ कहानी का कविता में रूपान्तरण,
- ❖ अनुभवों के आधार पर लेखन
- ❖ वार्तालाप की दक्षता के विकास हेतु संवाद लेखन ।
- ❖ किसी भी समसामयिक विषय पर कहानी / कविता लेखन

Syllabus – TGT (Social Studies)

Livelihoods, Economies and Societies:

I. Forest Society and Colonialism:

- Why Deforestation?
- The Rise of Commercial Forestry
- Rebellion in the Forest
- Forest Transformations in Java

II. Pastoralists in the Modern World:

- Pastoral Nomads and their Movements
- Colonial Rule and Pastoral Life
- Pastoralism in Africa

III. Indus Valley Civilisation (Ancient History)

the Cities of Harappa, Mohenjo Daro and Lothal as well as the art, town planning and agriculture of the civilizations.

IV. Muvender (Medieval History):- Cheras, Cholas nad Pandyas - Dynastics that ruled over South India during the Sangam Age ".Vijay Nagar : Founder, Dynastics, Capital and Administraion .

V. Revolution of 1857 (Modern India)

- Nawabs losing Power
- The Peasants and the Sepoys Responses to reforms
- Mutiny become as popular rebellion.

GEOGRAPHY

Motions of the Earth : Rotation, Revolution, Occurance of Day and night ; Change of seasons ; Latitudes and Longitudes ; Finding time .

Earth's Interior: Origin of Continents and Ocean basins Wegener's Continental drift Theory, Theory of plate Tectonics, Earthquakes and Volcanoes, Folding and Faulting .

1. India

- Location
- Size
- India and the World
- India's Neighbours

2. Physical Features of India:

- Major Physiographic Divisions–Himalayan Mountains, Northern Plains, Peninsular Plateau, Indian Desert, Coastal Plains, Islands

3. Drainage:

- Concept
- Drainage Systems in India
- The Himalayan Rivers-Ganga and Brahmaputra River System
- The Peninsular Rivers- Narmada Basin, Tapti Basin, Godavari Basin, Mahanadi Basin, Krishna Basin, Kaveri Basin
- Lakes
- Role of Rivers in the Economy
- River Pollution

4. Climate:

- Concept
- Climatic Controls
- Factors influencing India's climate –Latitude, Altitude, Pressure and Winds (excluding Jet Streams and Western Cyclonic Disturbances and related figures)
- The Seasons – Cold Weather Season, Hot Weather Season, Advancing Monsoon, Retreating/Post Monsoons
- Distribution of Rainfall
- Monsoon a unifying bond

5. Natural Vegetation and Wild Life:

- Types of Vegetation–Tropical Evergreen Forests, Tropical Deciduous Forests, Thorn Forests and Shrubs, Montane Forests, Mangrove Forests
- Wild Life

6. Population:

- Population Size and Distribution–India's Population Size and Distribution by Numbers, India's Population Distribution by Density
- Population Growth and Processes of Population Change–Population Growth, Processes of Population Change/Growth

Democratic Politics - I

1. What is Democracy? Why Democracy?

- What is Democracy?
- Features of Democracy
- Why Democracy?
- Broader Meanings of Democracy

2. Constitutional Design:

- Democratic Constitution in South Africa
- Why do we need a Constitution?
- Making of the Indian Constitution
- Guiding Values of the Indian Constitution

3. Electoral Politics:

- Why Elections?
- What is our System of Elections?
- What makes elections in India democratic?

4. Working of Institutions:

- How is the major policy decision taken?
- Parliament
- Political Executive
- The Judiciary

5. Democratic Rights:

- Life without Rights
- Rights in a Democracy
- Rights in the Indian Constitution
- Expanding scope of rights

Economics

1. People as Resource:

- Overview
- Economic Activities by Men and Women
- Quality of Population
- Unemployment

2. Poverty as a Challenge:

- Overview
- Two typical cases of Poverty
- Poverty as seen by Social Scientists
- Poverty Estimates
- Vulnerable Groups
- Interstate Disparities
- Global Poverty Scenario
- Causes of Poverty
- Anti-Poverty measures
- The Challenges Ahead

3. Food Security in India:

- Overview
- What is Food Security?
- Why Food Security?
- Who are food insecure?
- Food Security in India
- What is Buffer Stock?
- What is the Public Distribution System?
- Current Status of Public Distribution System
- Role of Cooperatives in

food security **India and the**

Contemporary World – II

Events and Processes:

1. The Rise of Nationalism in Europe:

- The French Revolution and the Idea of the Nation
- The Making of Nationalism in Europe
- The Age of Revolutions: 1830-1848
- The Making of Germany and Italy

- Visualizing the Nation
- Nationalism and Imperialism

2. Nationalism in India:

- The First World War, Khilafat and Non - Cooperation
- Differing Strands within the Movement
- Towards Civil Disobedience
- The Sense of Collective Belonging

Livelihoods, Economies and Societies:

3. The Making of a Global World:

- The Pre-modern world
- The Nineteenth Century (1815-1914)
- The Inter war Economy
- Rebuilding a World Economy: The Post-War Era

4. The Age of Industrialization:

- Before the Industrial Revolution
- Hand Labour and Steam Power
- Industrialization in the Colonies
- Factories Come Up
- The Peculiarities of Industrial Growth
- Market for Goods

Everyday Life, Culture and Politics:

5. Print Culture and the Modern World:

- The First Printed Books
- Print Comes to Europe
- The Print Revolution and its Impact
- The Reading Mania
- The Nineteenth Century
- India and the World of Print
- Religious Reform and Public Debates
- New Forms of Publication
- Print and Censorship

Contemporary India – II

1. Resources and Development:

- Concept
- Development of Resources
- Resource Planning – Resource Planning in India, Conservation of Resources
- Land Resources
- Land Utilization
- Land Use Pattern in India
- Land Degradation and Conservation Measures
- Soil as a Resource - Classification of Soils, Soil Erosion and Soil Conservation

2. Forest and Wildlife

- Conservation of forest and wildlife in India
- Types and distribution of forests and wildlife resources
- Community and Conservation

3. Water Resources:

- Water Scarcity and The Need for Water Conservation and Management
- Multi-Purpose River Projects and Integrated Water Resources Management
- Rainwater Harvesting

4. Agriculture:

- Types of Farming – Primitive Subsistence, Intensive Subsistence, Commercial
- Cropping Pattern – Major Crops, Food Crops other than Grains, Non Food Crops, Technological and Institutional Reforms
- Food Security (excluding impact of globalization on agriculture)

5. Minerals and Energy Resources

- What is a mineral?
- Mode of occurrence of Minerals – Where are these minerals found?, Ferrous Minerals, Non-Ferrous Minerals, Non-Metallic Minerals, Rock Minerals
- Conservation of Minerals
- Energy Resources – Conventional Sources of Energy, Non-Conventional Sources of Energy
- Conservation of Energy Resources

6. Manufacturing Industries:

- Importance of Manufacturing – Industrial Location (excluding Industry Market Linkage), Agro based Industry (excluding Cotton Textiles, Jute Textiles, Sugar Industry), Mineral based Industries (excluding Iron Steel Industry, Cement Industry), Industrial Pollution and Environmental Degradation, Control of Environmental Degradation

7. Life Lines of National Economy:

- Roadways
- Railways
- Pipelines
- Waterways
- Major Seaports
- Airways
- Communication
- International Trade
- Tourism as a Trade

Democratic Politics – II

1. Power Sharing:

- Belgium and Sri Lanka
- Majoritarianism in Sri Lanka
- Accommodation in Belgium
- Why power sharing is desirable?

- Forms of Power Sharing

2. Federalism:

- What is Federalism?
- What make India a Federal Country?
- How is Federalism practiced?
- Decentralization in India

3. Gender, Religion and Caste:

- Gender and Politics - Public/Private division, Women's political representation
- Religion, Communalism and Politics –Communalism, Secular State
- Caste and Politics - Caste inequalities, Caste in politics, Politics in caste

4. Political Parties:

- Why do we need Political Parties? –
- Meaning, Functions, Necessity
- How many parties should we have?
- National Parties
- State Parties
- Challenges to Political Parties
- How can Parties be reformed?

5. Outcomes of Democracy:

- How do we assess democracy's outcomes?
- Accountable, responsive and legitimate government
- Economic growth and development
- Reduction of inequality and poverty
- Accommodation of social diversity
- Dignity and freedom of the citizens

Understanding Economic Development

1. Development:

- What Development Promises – Different People, Different Goals
- Income and Other Goals
- National Development
- How to compare different countries or states?
- Income and other criteria
- Public Facilities
- Sustainability of Development

2. Sectors of the Indian Economy:

- Sectors of Economic Activities
- Comparing the three sectors
- Primary, Secondary and Tertiary Sectors in India
- Division of sectors as organized and unorganized
- Sectors in terms of ownership: Public and Private Sectors

3. Money and Credit:

- Money as a medium of exchange
- Modern forms of Money
- Loan activities of Banks
- Two different Credit situations
- Terms of Credit

- Formal Sector Credit in India
- Self Help Groups for the Poor

4. Globalization and the Indian Economy:

- Production across countries
- Inter linking production across countries
- Foreign Trade and integration of markets
- What is Globalization?
- Factors that have enabled Globalization
- World Trade Organization
- Impact of Globalization in India
- The Struggle for a fair Globalization

5. Consumer Rights

- Consumer in market place
- Consumer movement
- Consumer Rights

पाठ्यक्रम - प्रशिक्षित स्नातक शिक्षक (हिंदी-संस्कृत)

हिंदी पाठ्यक्रम

(क) हिन्दी साहित्य

- * हिन्दी साहित्य का इतिहास (आदिकाल से आधुनिक काल तक)
- * प्रमुख कवि एवं लेखक तथा उनकी कृतियाँ
- * साहित्य की प्रमुख प्रवृत्तियाँ

(ख) गद्य एवं काव्य

- * गद्य विधाएँ: (कहानी, उपन्यास, नाटक, निबंध, संस्मरण, आलोचना, रेखाचित्र, संस्मरण, आत्मकथा, जीवनी, यात्रा साहित्य, रिपोर्टाज आदि ।)
- * काव्यशास्त्र
- * काव्य विधाएँ एवं प्रमुख काव्यधाराएँ
- * साहित्यिक विशेषताएँ एवं भाषा-शैली

(ग) हिन्दी भाषा एवं व्याकरण

- * वर्ण एवं वर्तनी
- * शब्द भेद एवं शब्द निर्माण
- * संधि, समास, उपसर्ग, प्रत्यय
- * वाक्य संरचना एवं वाक्य भेद
- * अलंकार (शब्दालंकार एवं अर्थालंकार)
- * मुहावरे एवं लोकोक्तियाँ

(घ) अपठित बोध

- * गद्यांश एवं पद्यांश आधारित प्रश्न

(ङ) लेखन कौशल

- * अनुच्छेद लेखन
- * पत्र लेखन
- * विज्ञापन लेखन
- * संक्षिप्त रचनात्मक लेखन

संस्कृत पाठ्यक्रम

(क) पाणिनि व्याकरण के आधार पर व्याकरण का सामान्य ज्ञान

- * प्रमुख शब्द रूप
- * प्रमुख धातु रूप (लट, लङ, लृट, लोट, विधिलिङ् आदिलकारों में)
- * सभी लकारों के प्रयोग का ज्ञान
- * कारक एवं विभक्तियाँ
- * संधि (स्वर, व्यंजन, विसर्ग)
- * समास (अव्ययीभाव, तत्पुरुष, द्वंद्व, बहुव्रीहि आदि)
- * प्रत्यय एवं उपसर्ग
- * अव्यय शब्द

(ख) वाक्य रचना एवं अनुवाद

- * शुद्ध एवं अशुद्ध वाक्य
- * वाक्य निर्माण
- * हिन्दी से संस्कृत एवं संस्कृत से हिन्दी अनुवाद

(ग) काव्य एवं गद्य

- * संस्कृत साहित्य एवं वैदिक साहित्य के इतिहास का सामान्य ज्ञान
- * संस्कृत में काव्यशास्त्र एवं नाटकादि का अध्ययन
- * प्रमुख संस्कृत ग्रंथों का सामान्य परिचय
- * श्लोक आधारित प्रश्न

(घ) साहित्यिक तत्व

- * प्रमुख छंद
- * अलंकार
- * संस्कृत साहित्य का सामान्य परिचय

(ङ) अपठित बोध

- * अपठित गद्यांश एवं पद्यांश पर आधारित प्रश्न

Mathematics

REAL NUMBERS

- Review of representation of natural numbers, integers, and rational numbers on the number line. Rational numbers as recurring/ terminating decimals. Operations on real numbers.
 - Examples of non-recurring/non-terminating decimals. Existence of non-rational numbers (irrational numbers) such as $\sqrt{2}$, $\sqrt{3}$, and their representation on the number line. Explaining that every real number is represented by a unique point on the number line and conversely, viz. every point on the number line represents a unique real number.
 - Definition of nth root of a real number.
 - Rationalization, real numbers of the type $\frac{1}{a+b\sqrt{x}}$ and $\frac{1}{\sqrt{x}+\sqrt{y}}$ their combinations where x and y are natural number and a and b are integers.
 - Laws of exponents with integral powers. Rational exponents with positive real bases
- Fundamental Theorem of Arithmetic statements after reviewing work done earlier and after illustrating and motivating through examples, Proofs of irrationality of $\sqrt{2}, \sqrt{3}, \sqrt{5}$
- Number theory, sequences and patterns, Triangular Number, Hexagonal Number, square Numbers, Cube Numbers, patterns, Shape sequences, super cells, palindromic patterns. Kaprekar Constant .clock and Calender Number, collatz conjecture
 - Bhramagupta's method of Computation.

POLYNOMIALS

- Definition of a polynomial in one variable, with examples and counter examples.
- Coefficients of a polynomial, terms of a polynomial and zero polynomial.
- Degree of a polynomial. Constant, linear, quadratic and cubic polynomials. Monomials, binomials, trinomials. Factors and multiples.
- Zeros of a polynomial. Relationship between zeros and coefficients of quadratic polynomials.
- Remainder Theorem with examples, Factor Theorem.
- Factorization of $ax^2 + bx + c$, $a \neq 0$ where a, b and c are real numbers, and of cubic polynomials using the Factor Theorem.
- The algebraic expressions and identities. Verification of identities:

$$(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$$

$$(x \pm y)^3 = x^3 \pm y^3 \pm 3xy(x \pm y)$$

$$x^3 \pm y^3 = (x \pm y)(x^2 \mp xy + y^2)$$

$$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$$

And their use in factorization of polynomials.

MATRICES

R,R2,R3 as vector spaces over R and concept of Rn. Standard basis for each of them. Linear Independence and examples of different bases. Subspaces of R2, R3. Translation, Dilation, Rotation, Reflection in a point, line and plane. Matrix form of basic geometric transformations. Interpretation of eigen values and eigen vectors for such transformations and eigen spaces as invariant subspaces. Matrices in diagonal form. Reduction to diagonal form upto matrices of order 3. Computation of matrix inverses using elementary row operations. Rank of matrix, Solutions of a system of linear equations using matrices

LINEAR EQUATIONS IN TWO VARIABLES

Linear equations in one variable. Introduction to the equation in two variables. Focus on linear equations of the type $ax + by + c = 0$. Explain that a linear equation in two variables has infinitely many solutions and justify their being written as ordered pairs of real numbers, plotting them and showing that they lie on a line.

PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

Pair of linear equations in two variables and graphical method of their solution, consistency/inconsistency. Algebraic conditions for number of solutions. Solution of a pair of linear equations in two variables algebraically - by substitution, by elimination. Simple situational problems.

QUADRATIC EQUATIONS

Standard form of a quadratic equation $ax^2 + bx + c = 0$, ($a \neq 0$). Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula. Relationship between discriminant and nature of roots.

ARITHMETIC PROGRESSIONS

Arithmetic Progression, n th term and sum of the first n terms of A.P. and their application in solving daily life problems.

COORDINATE GEOMETRY

The Cartesian plane, coordinates of a point, names and terms associated with the coordinate plane, notations. Graphs of linear equations. Distance formula. Section formula (internal division) Area of Triangle.

INTRODUCTION TO EUCLID'S GEOMETRY

History - Geometry in India and Euclid's geometry. Euclid's method of formalizing observed phenomenon into rigorous Mathematics with definitions, common/obvious notions, axioms/postulates and theorems. The five postulates of Euclid. Showing the relationship between axiom and theorem, for example: (Axiom) 1. Given two distinct points, there exists one and only one line through them. (Theorem) 2. (Prove) Two distinct lines cannot have more than one point in common.

LINES AND ANGLES

- If a ray stands on a line, then the sum of the two adjacent angles so formed is 180 degrees and the converse.
- If two lines intersect, vertically opposite angles are equal.
- Lines which are parallel to a given line are parallel.

TRIANGLES

- Two triangles are congruent if any two sides and the included angle of one triangle is equal to any two sides and the included angle of the other triangle (SAS Congruence).
- Two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle (ASA Congruence).
- Two triangles are congruent if the three sides of one triangle are equal to three sides of the other triangle (SSS Congruence).
- Two right triangles are congruent if the hypotenuse and a side of one triangle are equal (respectively) to the hypotenuse and a side of the other triangle. (RHS Congruence)
- The angles opposite to equal sides of a triangle are equal.
- The sides opposite to equal angles of a triangle are equal.

- If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.
- If a line divides two sides of a triangle in the same ratio, the line is parallel to the third side.
- If in two triangles, the corresponding angles are equal, their corresponding sides are proportional and the triangles are similar.
- If the corresponding sides of two triangles are proportional, their corresponding angles are equal and the two triangles are similar.
- If one angle of a triangle is equal to one angle of another triangle and the sides including these angles are proportional, the two triangles are similar.

QUADRILATERALS

- The diagonal divides a parallelogram into two congruent triangles.
- In a parallelogram opposite sides are equal, and conversely.
- In a parallelogram opposite angles are equal, and conversely.
- A quadrilateral is a parallelogram if a pair of its opposite sides is parallel and equal.
- In a parallelogram, the diagonals bisect each other and conversely.
- In a triangle, the line segment joining the mid points of any two sides is parallel to the third side and in half of it and (motivate) its converse.

CIRCLES

- Equal chords of a circle subtend equal angles at the center and (motivate) its converse.
- The perpendicular from the center of a circle to a chord bisects the chord and conversely, the line drawn through the center of a circle to bisect a chord is perpendicular to the chord.
- Equal chords of a circle (or of congruent circles) are equidistant from the center (or their respective centers) and conversely.
- The angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle.
- Angles in the same segment of a circle are equal.
- If a line segment joining two points subtends equal angle at two other points lying on the same side of the line containing the segment, the four points lie on a circle.
- The sum of either of the pair of the opposite angles of a cyclic quadrilateral is 180° and its converse.
- Tangent to a circle at, point of contact
- The tangent at any point of a circle is perpendicular to the radius through the point of contact.
- The lengths of tangents drawn from an external point to a circle are equal.

AREAS

Area of a triangle using Heron's formula, Area of sectors and segments of a circle. Problems based on areas and perimeter / circumference of the above said plane figures. (In calculating area of segment of a circle, problems should be restricted to central angle of 60° , 90° and 120° .)

SURFACE AREAS AND VOLUMES

Surface areas and volumes of spheres (including hemispheres) and right circular cones. Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones. Area of a Triangle using Hero's formula and its application in finding the area of a quadrilateral.

STATISTICS

Bar graphs, histograms (with varying base lengths), and frequency polygons. Mean, median and mode of grouped and ungrouped data, infographics, presentation of data, tabular form.

PROBABILITY

Classical definition of probability. Simple problems on finding the probability of an event. elementary probability and basic law. Discrete and continuous random variable.

TRIGONOMETRY

Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined); motivate the ratios whichever are defined at 0° and 90° . Values of the trigonometric ratios of 30° , 45° and 60° . Relationships between the ratios.

TRIGONOMETRIC IDENTITIES

Proof and applications of the identity $\sin^2 A + \cos^2 A = 1$. Only simple identities to be given.

HEIGHTS AND DISTANCES:

Angle of elevation, Angle of Depression. Simple problems on heights and distances. Problems should not involve more than two right triangles. Angles of elevation / depression should be only 30° , 45° , and 60°

CALCULUS.

Sets. Functions and their graphs : polynomial, sine, cosine, exponential and logarithmic functions. Step function, Limits and continuity. Differentiation, Methods of differentiation like Chain rule, Product rule and Quotient rule. Second order derivatives of above functions. Integration as reverse process of differentiation. Integrals of the functions introduced above.

INEQUALITIES

Elementary Inequalities, Absolute value, Inequality of means, Cauchy – Schwarz Inequality, Tchebychef's Inequality.

Physics

Motion:

Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform motion and uniformly accelerated motion, elementary idea of uniform circular motion.

Force and Newton's laws :

Force and Motion, Newton's Laws of Motion, Action and Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration.

Gravitation:

Gravitation; Universal Law of Gravitation, Force of Gravitation of the earth (gravity), Acceleration due to Gravity; Mass and Weight; Freefall.

Floatation:

Thrust and Pressure. Archimedes' Principle; Buoyancy.

Work, Energy and Power:

Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy).

Sound:

Nature of sound and its propagation in various media, speed of sound, range of hearing in humans; ultra sound; reflection of sound; echo.

Effects of Current

Electric current, potential difference and electric current. Ohm's law; Resistance, Resistivity, Factors on which the resistance of a conductor depends. Series combination of resistors, parallel combination of resistors and its applications in daily life. Heating effect of electric current and its applications in daily life. Electric power, Interrelation between P, V, I and R.

Magnetic effects of current

Magnetic field, field lines, field due to a current carrying conductor, field due to current carrying coil or solenoid; Force on current carrying conductor, Fleming's Left Hand Rule, Electric Motor, Electromagnetic induction. Induced potential difference, Induced current. Fleming's Right Hand Rule, Electric Generator, Direct current. Alternating current: frequency of AC. Advantage of AC over DC. Domestic electric circuits.

Syllabus - TGT (Biology~Chemistry)

General Science

- *Magnets and magnetic properties
- *Measurement of Length and Motion
- *Materials Around Us
- *Temperature and its Measurement
- *Nature and natural resources types and conservation
- *Celestial objects, eclipses, Lunar and solar calendars, constellations
- *Electricity: Circuits and their Components, Magnetic and Heating Effects
- *Heat Transfer-Conduction, convection, radiation, wind, storms, cyclones, tornados and thunderstorm
- *Earth as interconnected system, Nature of solar energy: solar radiation, Solar energy interaction with the Earth's Surface and differential heating of the Earth (the role of the atmosphere and the Earth's surface), Differential warming of the Earth causes winds, Bio-geochemical cycles (water cycle, carbon cycle, nitrogen cycle, oxygen cycle), Human impact on Earth's system
- *Measurement of Time and Motion, speed, velocity, acceleration
- *Light: Shadows and Reflections, lenses and mirrors, structure of eye
- *Exploring Forces, type of forces and properties, Pressure
- *Earth - Unique Life Sustaining Planet, Gravitation
- *Health and hygiene, types of diseases, prevention & control measures, vectors, pathogens, antibiotics
- *Contributions of Indian Scientist in the field of science.

Biology

- ***Cell – Basic unit of life**; structure and function of key organelles (nucleus, mitochondria, plastids, endoplasmic reticulum, vacuoles, plasma membrane, cell wall), Permeability of cell membranes, Cellular division and cancer, Recent advancement in cell biology, Biomolecules – Types and structure of Carbohydrates, Proteins, Lipids, Nucleic acids and Enzymes – Types and properties.

***Level of organisation in the living organisms – Plant and animal tissue**

Types, structure and function

Elementary idea of musculoskeletal system; Care of musculoskeletal system: injuries, postural care, nutrition and exercise

***Life processes**

Basic concept of nutrition, respiration, transport and excretion in plants and animals.

***Control and co-ordination in animals and plants**

Tropic and Nastic movements in plants; Introduction of plant hormones; Control and co-ordination in animals: Nervous system; Voluntary, involuntary and reflex action; Chemical co-ordination: animal hormones.

***Reproduction in plants and animals**

Types of asexual reproduction with examples, Sexual reproduction in flowering plants (flower and its parts, pollination, fertilisation, seed dispersal), Sexual reproduction in humans: male and female reproductive systems (structure and function, formation of gametes, sperm and egg, fertilisation, pregnancy and development of embryo, menstrual cycle), Reproductive health and hygiene, birth control methods and importance

***Diversity in living world**

Importance of classification, Five kingdoms and their key features with examples, Major division of animals and plants, Binomial nomenclature, Acellular entities: viruses

***Heredity, variation and Evolution**

Heredity; Mendel's contribution- Laws for inheritance of traits: Sex determination; brief introduction of Evolutionary Theory and evidences, Human Evolution, geological time zone.

***Improvement in food production**

Plant and animal breeding and selection for quality improvement and management, Use of fertilizers and manures, Protection from pests and diseases, Organic farming.

***Ecology**

Eco-system and interactions, Environmental issues.

***Biotechnology**

Basic Principles of Biotechnology.

Chemistry

***Nature of matter**

Definition of matter, Particulate nature of matter, states of matter: solid, liquid and gas and their characteristics, change of state – melting (absorption of heat), freezing, evaporation (cooling by evaporation), condensation, sublimation; Elements, compounds and mixtures, Homogeneous and heterogeneous mixtures; Solutions, suspensions, colloids and their properties, various ways to express concentration of solutions, Physical and chemical changes, (excluding separation the components of a mixture) pure and impure substances.

***Structure of Atom**

Atoms and molecules, Laws of chemical combination, Chemical formula of chemical compounds, Atomic and molecular masses, Subatomic particles – electrons, protons and neutrons, Atomic Models (Thomson's Model, Rutherford's Model, and Bohr's Model), electronic configuration, symbols, valency, atomic number, mass number, Isotopes, Isobars, radioactivity, Dalton's Atomic Theory, formula unit mass, ions - ionic compounds and their properties.

***Chemical reactions and equations**

Chemical equation, Balanced chemical equation, implication of balanced chemical equation, Types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, endothermic-exothermic reactions, oxidation and reduction.

***Periodicity of elements**

Classification of elements, Mendeleev's periodic law, Modern periodic law, periodic properties, position of Hydrogen in periodic table.

***Acids, Bases and salts**

Definitions in terms of furnishing of H^+ and OH^- ions, acid-base indicators - identification using indicators, chemical properties, examples and uses, neutralization, concept of pH scale, importance of pH in everyday life; preparation and uses of Sodium Hydroxide, bleaching powder, baking soda, washing soda, gypsum and Plaster of Paris.

***Metals and non-metals**

Properties of metals, non-metals and alloys, reactivity series, basic metallurgical processes, corrosion and its prevention.

***Carbon and its Compounds**

Covalent bonds – formation and properties of covalent compounds, versatile nature of carbon, Hydrocarbons – saturated and unsaturated, homologous series, nomenclature of alkanes, alkenes, alkyne and carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes), chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction), ethanol and ethanoic acid (only properties and uses), soaps and detergents. Concepts of hybridization and shapes of molecules structural formula and molecular models, isomerism, IUPAC nomenclature of organic compounds.

***Chemistry in everyday life**

Antibiotics, antiseptics and antipyretics, polymers.

मराठी अभ्यासक्रम (TGT)

मराठी साहित्य

- अ) मराठी साहित्याचे प्राचीन, अर्वाचीन आणि आधुनिक असे वर्गीकरण केले जाते.
- १) प्राचीन साहित्य-महानुभाव, संत रचना, पंडिती साहित्य, शाहिरी साहित्य, बखरसाहित्य, शिलालेख, ताम्रपट.
- २) अर्वाचीन साहित्य- कथा व कथेचे प्रकार, कविता व कवितेचे प्रकार, नाटक व नाटकाचे प्रकार, कादंबरी व कादंबरीचे प्रकार, लोकसाहित्य.
- ३) आधुनिक साहित्य- कथा, नाटक, कादंबरी, नाटक यांचे बदलते स्वरूप, या साहित्या संस्कृतीचा प्रभाव, चरित्र, आत्मचरित्र, प्रवासवर्णन, समीक्षा, ललितलेखन.
- आ) भाषाविज्ञान
- १) मराठी भाषेची उत्पत्ती- भाषाकुळ, इतिहास, संकल्पना, अन्य भाषांचा प्रभाव.
- २) प्रमाण भाषा व बोलीभाषा, प्रमुख बोली.
- ३) लेखन नियम व विविध कोश.
- इ) साहित्यिक चळवळी
- १) सांस्कृतिक साहित्य- विविध पंथ व त्यांचे कार्य, पौराणिक, ऐतिहासिक, धार्मिक.
- २) ग्रामीण, दलित, स्त्रीवादी, प्रादेशिक, राजकीय, सामाजिक, विनोदी साहित्य.
- ३) नियतकालिके, वर्तमानपत्रे, मासिके, व्यंगचित्रे.
- ई) मराठी व्याकरण
- १) स्वन, स्वनिम व स्वनांतरे
- २) शब्दांच्या जाती, विभक्ती, समास, प्रयोग, काळ, वाक्यप्रकार व वाक्यरुपांतर, संधी, शब्दसिद्धी, विरामचिन्हे.
- ३) शब्दसंपत्ती- समानार्थी-विरुद्धार्थी शब्द, लिंगविचार, वचनविचार, शब्दसमुहाबद्दल एक शब्द, वाक्यप्रचार, म्हणी.
- उ) मराठी भाषा कौशल्य
- १) आकलन- गद्य-पद्य आकलन, काव्य रसग्रहण, अलंकार, वृत्त, रसविचार.
- २) लेखन- पत्र, कथा, निबंध, सारांश, जाहिरात.
- ३) मुलाखत, चर्चा, प्रश्नमंजुषा, सादरीकरण.
- ऊ) अध्यापन कौशल्य
- १) पाठनियोजन - पुर्वानुभव, शैक्षणिक साहित्य.
- २) अध्यापन पद्धती- आनंददायी, क्षेत्र अभ्यास, प्रकल्प पद्धत.
- ३) बालमानसशास्त्र, तत्त्वज्ञान, वर्ग व्यवस्थापन.

ब्रह्म इतर

- १) प्रमुख लेखक, कवी, नाटककार, समीक्षक, व्याकरणकार.
 - २) संमेलने, पुरस्कार, आधुनिकतेचा प्रभाव, इ-साहित्य.
 - ३) सामान्यज्ञान व बुद्धिमत्ता.
-

TGT (Tamil)

பட்டதாரி ஆசிரியர் தேர்வு

பாடம்: தமிழ்

பாடத்திட்டம் 2026

1. படித்தல், பொருளுணர் திறன் பயிற்சி:

உரைநடைப் பத்தியைப் படித்து, கேட்கப்பட்டுள்ள வினாக்களுக்கு விடை எழுதுதல் (மொழி, இலக்கியம், வரலாறு, அறிவியல் முதலிய பொருண்மைகளிலிருந்து பத்தியின் கருப்பொருள் அமையலாம்) செய்யுள் பகுதியைப் படித்து, கேட்கப்பட்டுள்ள வினாக்களுக்கு விடை எழுதுதல்.

2. இலக்கணம்:

தொல்காப்பியம், எழுத்து, அளபெடை, பகுபத உறுப்பிலக்கணம், தொடர் இலக்கணம், ஆகுபெயர், துணை வினைகள், வல்லினம் மிகும் இடங்கள், வல்லினம் மிகா இடங்கள், எச்ச வகைகள், யாப்பிலக்கணம், சொல் வகைகள், தொகாநிலைத் தொடர்கள், தொகைநிலைத் தொடர்கள், அணி இலக்கணம், வினா, விடை, வழு வகைகள், பொருள்கோள் வகைகள், புணர்ச்சி வகைகள், இலக்கணக் குறிப்புகள், அகப்பொருள் இலக்கணம், புறப்பொருள் இலக்கணம், பாவகை, அலகிடுதல்,

3. இலக்கியம்:

சங்ககால இலக்கியம், காப்பிய இலக்கியம், இடைக்கால இலக்கியம், பக்தி இலக்கியம், தற்கால இலக்கியம்
தமிழ் விடு தூது, பெரிய புராணம், புறநானூறு, மணிமேகலை
திருக்குறள், குடும்ப விளக்கு, இராவண காவியம், சீவக சிந்தாமணி, பரிபாடல், பிள்ளைத்தமிழ், திருவிளையாடல் புராணம், கம்ப இராமாயணம்
சிலப்பதிகாரம், முத்தொள்ளாயிரம், தேம்பாவணி
மரபுக் கவிதை, புதுக் கவிதை, சிறுகதை, புதினம், நாடகம், கட்டுரை,
முத்தமிழ் வகைமை; வளர்ச்சி, தமிழ், தமிழர், தமிழ்நாடு சிறப்புகள், நாகரிகப் பண்பாட்டுத் தொன்மை; முதன்மை, திராவிட மொழிக் குடும்பம், தமிழ்ப் பெண்டிர் சிறப்பு, தமிழர் கலைகள், அகம், புறம், திணை, அறம் பற்றிய சிந்தனைகள், சிறந்த தமிழ்ப் படைப்பாளிகள் அவர்தம் நூல்களும் பொருண்மைகளும்.

4. படைப்பாக்கம் & மொழித்திறன்:

கடிதம் எழுதுதல் (அலுவல் / உறவுமுறைக் கடிதம்)
கொடுக்கப்பட்ட தலைப்பில் கட்டுரை எழுதுதல்
கொடுக்கப்பட்ட படத்தைப் பார்த்துக் கவினுற வருணித்து எழுதுதல்.

SYLLABUS FOR TGT (ENGLISH)

Section A: Reading

Comprehension

Three or four unseen passages from different genres (prose, poetry, drama, articles, editorials, scientific, and literary extracts).

Questions will test comprehension, inference, vocabulary, tone, rhetorical devices, and logical sequencing.

Section B: Writing Ability

B1. Functional Writing:

Formal and Informal Letters: Business letters, job applications, letters to editors, complaints, and personal letters.

Report Writing: Factual description of events, newspaper reports, and analytical reports. Notices, Circulars, and Press Releases.

B2. Creative and Analytical Writing:

Essay Writing: Argumentative, analytical, reflective, and descriptive essays.

Article/Debate/Speech: Expressing opinions on socio-political, economic, and educational issues.

Section C: Grammar and Usage

Parts of Speech: Nouns, Pronouns, Verbs, Adverbs, Adjectives, Prepositions, Conjunctions. Sentence Structure : Types of sentences, subject-verb agreement, parallelism, and sentence connectors.

Tenses and Their Usage: Active-passive voice, sequence of tenses, and reported speech. Clauses: Noun, adjective, and adverb clauses.

Common Errors: Articles, prepositions, modifiers, redundancy, and word order. Editing and Proofreading: Error detection, sentence correction, and transformation.

Section D: Literature

D1. British Literature:

Elizabethan and Jacobean Drama: William Shakespeare, Christopher Marlowe, Ben Jonson. Poetry: John Donne, Alexander Pope, William Wordsworth, Samuel Taylor Coleridge, John Keats. Victorian and Modern Writers: Charles Dickens, Thomas Hardy, Virginia Woolf, T.S. Eliot, George Orwell.

D2. Indian Writing in English:

R.K. Narayan, Mulk Raj Anand, Anita Desai, Vikram Seth, Arundhati Roy, Amitav Ghosh.

D3. World Literature:

Gabriel García Márquez, Chinua Achebe, Pablo Neruda, Khaled Hosseini.

Syllabus – Headmaster/Headmistress

I Prospective on Education and Leadership:

A	Understanding the Learner
	<ul style="list-style-type: none"> ▪ Concept of growth, maturation and development, principles and debates of development, ▪ Development tasks and challenges with special reference to the foundational and preparatory school children. ▪ Domains of Development: Physical, Cognitive, Socio-emotional, Moral etc., deviations in development and its implications. ▪ Role of Primary and Secondary Socialization agencies. Steps to ensure Home school continuity. ▪ Mental Health and Well Being.
B	Understanding Teaching Learning
I	<p>Theoretical perspectives on Learning -Behaviorism, Cognitivism and Constructivism with special reference to their implications for:</p> <ul style="list-style-type: none"> • The role of teacher • The role of learner • Nature of teacher-student relationship • Innovative Pedagogical Practices • Productive Classroom environment • Understanding of discipline, power etc. • Barriers in learning
II	<p>Factors affecting learning and their implications for:</p> <ul style="list-style-type: none"> • Designing classroom instructions, • Planning student activities and, • Creating learning spaces in school
C	Planning and Organization of Teaching-Learning
	<ul style="list-style-type: none"> • Concept of Syllabus and Curriculum, Overt and Hidden Curriculum • Preparation of School Time-table • Foundational Literacy and Numeracy, Early Childhood Care and Education • Competency Based Lesson Planning. • Competency Based Assessment and effective use of HPC • Instructional Material and Resources • Digital Technology in Teaching Learning • Art, Physical health and wellbeing • Classroom Observation, Feedback and Follow-up, Reflections and Dialogues as a means of constructivist teaching
D	Creating Conducive Learning Environment
	<ul style="list-style-type: none"> • Inclusive Education: The concepts of Diversity, disability and Inclusion, implications of disability as social construct, types of disabilities-their identification and interventions • Concept of School Mental Health & Well Being. Addressing the curative, preventive and promotive dimensions of mental health for all students and staff. Provisioning for guidance and counselling. • Developing School and community as a learning resource. • The Rights of Persons with Disabilities Act, 2016
E	School Organization and Leadership
	<ul style="list-style-type: none"> • Leader as reflective practitioner, team builder, initiator, coach and mentor. • Perspectives on School Leadership: instructional, distributed and transformative

	<ul style="list-style-type: none"> • Vision building, goal setting and creating a School development Plan • Using School Processes and forums for strengthening teaching learning-Annual Calendar, time-tabling, parent teacher forums, school assembly, teacher development forums, using achievement data for improving teaching –learning, School Self-Assessment and Improvement • Creating partnerships with community, industry and other neighboring schools and Higher Education Institutes – forming learning communities, • School Accreditation.SQAF
F	Perspectives in Education
	<ul style="list-style-type: none"> • Role of school in achieving aims of education. • Educational Policies of Govt of India • National Education Policy-2020 • National Curriculum Framework Foundational Stage-2022 • National Curriculum Framework for School Education-2023 • NIPUN Bharat Mission • Guiding Principles for Child Rights, Protecting and provisioning for rights of children to safe and secure school environment, • Right of Children to free and Compulsory Education Act, 2009, • Historically studying the National Policies in education with special reference to school education; • School Curriculum Principles: Perspective, Learning and Knowledge, Curricular Areas, School Stages – Pedagogy & Assessment

II Management, Supervision and Leadership

<ul style="list-style-type: none"> • Management: its nature and scope; The Role of a Manager in an Organization. • The Management Processes; Planning, Organization, Directing and Controlling. • Leadership: The Tasks of a Leader, Leadership Styles; Leadership Theories; A successful Leader versus an effective Leader. • Performance Appraisal — Potential appraisal and development .Feedback and Performance Counseling. Career Planning, Training and Development, Rewards and Employee Welfare. • Motivation, Morale and Incentives: Theories of Motivation; How Managers Motivate; Concept of Morale; Factors determining morale; Role of Incentives in Building up Morale. • Communication: Steps in the Communication Process; Communication Channels; Oral versus Written Communication; Verbal versus non-verbal Communication; upward, downward and lateral Communication; Barriers to Communication, • Role of Information Technology. • Class Observation and School Supervision. • Ethics in School Management. Emotional Intelligence.

III Administration

<ul style="list-style-type: none"> ▪ CCS (CCA) Rules 1965 ▪ CCS (Conduct) Rules 1964 ▪ POSH & POCSO Acts ▪ MoE, NCPDR and NDMA guidelines for school safety and security
--