<u>Kothari international School, Noida</u> <u>AS LEVEL</u> <u>Annual Curriculum Overview for the Session 2024-2025</u>

SUBJECT – ENGLISH LANGUAGE

<u>TOPIC/UNIT</u>	<u>CONTENT</u>
Unit 1: Text Analysis	 Audience, Purpose, Register, Subject Lexis Grammar Semantics Graphology
Unit 2: Short Writing	 Personal Form - Diary, Letters, Journal Understand the style and structure of personal form Journalistic Form - Article, Speech, News Report, Review, Podcast, LOR Commercial Form – Advertisements, Leaflet And Blurb
Unit 3: Extended Writing	 Descriptive/Narrative Article/Letters/Speech Review/Report
Unit 4: Reflective Commentary	 Reflective Commentary- Parts of a Reflective Commentary, Understand, research and apply in the commentary Reflective Commentary- Style and Structure Understand, research and apply in the commentary Commentary - Commentary Exam Style Commentary Practice - Task 1

Exam Style CommentaryPractice - Task 2
Exam Style CommentaryPractice - Task 3

SUBJECT – ENGLISH GENERAL

TOPIC/UNIT	CONTENT
UNIT 1: - - Core Course Knowledge	 Topic and Key Skills Syllabus Aims and Objectives Course Content- Writing Essays- Demonstrating critical thought- Choosing topic areas (A. Economic, historical, moral, political, social; B. Science with its history, philosophy, ethics, general principles and application, Environmental issues; Technology; Mathematics; C. Literature, Language, the Arts, Crafts, the Media) Criteria for assessing essays Key Pointers defining 'Core Knowledge' of AS EGP course Considering audience, register and purpose Effective use of English language Understanding the task- expository, argumentative, discursive writing skills and importance of Tone Analysing Command Words and Phrases, Qualifiers Choosing one's approach to the essay task – traditional (argumentative) versus discursive (investigative) Key elements of an essay – Shape, Thesis, Evidence, Reasoned Conclusion
	out of the 10 given essay questions (600-700

	words)
Unit 2: Planning and Organising Responses	 Writing to a time limit Deconstructing essay questions- Scope, Nouns, Limiting and Broad Terms, Command Words and Phrases Vocabulary for discussing global issues Generating ideas for the essay- Lenses, Hand Approach, General Idea to Specific Examples Stakeholders, Perspective and Context How can brainstorming help? Applying and Analysis of deconstruction of questions Practising what you have learnt- Exam Style Questions (1-5)
Unit 4: Skills Review and Practice	 Critical Reading Understanding and applying information Essay Practice
Unit 3- Chapter 3.1- Argumentative Writing	
Chapter 3.2- Exploring issues through discursive writing Chapter 3.3- Skills Review and Practice	 Concept of an argument (Logical Reasoning, Main claim) Horizontal spectrum of an arguable point- Discursive, Argumentative, Persuasive Opposing viewpoints, linking evidence to claims Evidence- Reasons-Commentary Argumentative Appeals to Ethos, Logos, Pathos, Kairos Recognising weaknesses in arguments – Logical Fallacies (14 listed varieties) Taking a position- argumentative writing versus writing to explain (Tone, Thesis development, Counter Argument strategies) How to write a Counterargument? Analysing sources using the RAVEN technique Developing an effective line of reasoning Drawing conclusions 34.Building credibility

 Understanding the concept of discursive writing Writing the discursive thesis statement 38.Maintaining an objective tone Organisation of ideas- Handling perspectives, nuance, strategies for organisational structure Interim conclusions Comparing and contrasting sustained points and interim conclusions Evidence-based conclusions- Evaluating the issue- offering solutions Practising what you have learnt-Activity 10 and 11 Chapter 3.3- Skills Review and Practice Theme- Government Priorities Critical Reading Texts- Pages 165-182 Exam-style Questions- Practising what you have learnt (Page 182) Activity 6- Differentiation
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SUBJECT – MATHEMATICS

<u>TOPIC/UNIT</u>	<u>CONTENT</u>
<u>UNIT-1</u> Quadratics	 Solving quadratic equations by factorisation Completing the square The quadratic formula Solving simultaneous equations (one linear and one quadratic) Solving more complex quadratic equations Maximum and minimum values of a quadratic function

	 Solving quadratic inequalities The number of roots of a quadratic equation Intersection of a line and a quadratic curve
<u>UNIT-2</u> Functions	 Definition of a function Composite functions Inverse functions The graph of a function and its inverse Transformations of functions Reflections Stretches Combined transformations
<u>UNIT-3</u> Coordinate geometry	 Length of a line segment and midpoint Parallel and perpendicular lines Equations of straight lines The equation of a circle Problems involving intersections of lines and circles
<u>UNIT-4</u> Circular measure	RadiansLength of an arcArea of a sector
<u>UNIT-5</u> Trigonometry	 Angles between 0° and 90° The general definition of an angle Trigonometric ratios of general angles Graphs of trigonometric functions Inverse trigonometric functions Trigonometric equations Trigonometric identities Further trigonometric equations
<u>UNIT-6</u> Series	 Binomial expansion of (a+b)ⁿ Binomial coefficients Arithmetic progressions Geometric progressions

	Infinite geometric seriesFurther arithmetic and geometric series
<u>UNIT-7</u> Differentiation Further differentiation	 Derivatives and gradient functions The chain rule Tangents and normal Second derivatives Increasing and decreasing functions Stationary points Practical maximum and minimum problems Rates of change Practical applications of connected rates of change
<u>UNIT-8</u> Integration	 Integration as the reverse of differentiation Finding the constant of integration Integration of expressions of the form (ax+b)ⁿ Further indefinite integration Definite integration Area under a curve Area bounded by a curve and a line or by two curves Improper integrals Volumes of revolution
<u>UNIT-9</u> Representation of data	 Types of data Representation of discrete data: stem-and-leaf diagrams Representation of continuous data: histograms
Measures of central tendency Measures of variation	 Representation of continuous data:- cumulative frequency graphs Comparing different data representations The mode and the modal class The mean The median The range

	The interquartile range and percentilesVariance and standard deviation
<u>UNIT - 10</u> Permutations and combinations	 The factorial function Permutations Combinations Problem solving with permutations and combinations
<u>UNIT-11</u> Probability	 Experiments, events and outcomes Mutually exclusive events and the addition law Independent events and the multiplication law Conditional probability Dependent events and conditional probability
<u>UNIT-12</u> Probability distributions	 Discrete random variables Probability distributions Expectation and variance of a discrete random variable
UNIT- 13 The binomial and geometric distributions The normal distribution	 The binomial distribution The geometric distribution Continuous random variables The normal distribution Modelling with the normal distribution The normal approximation to the binomial distribution

SUBJECT - BIOLOGY

<u>TOPIC/UNIT</u>	<u>CONTENT</u>
UNIT-1 Cell structure	 1.1 Cells are the basic units of life 1.2 Cell biology and microscopy 1.3 Plant and animal cells as seen with a light microscope 1.4 Measuring size and calculating magnification 1.5 Electron microscopy 1.6 Plant and animal cells as seen with an electron microscope 1.7 Bacteria 1.8 Comparing prokaryotic cells with eukaryotic cells 1.9 Viruses
UNIT-2 Biological molecules	 2.1 Biochemistry 2.2 The building blocks of life 2.3 Monomers, polymers and macromolecules 2.4 Carbohydrates 2.5 Lipids 2.6 Proteins 2.7 Water
UNIT-3 Enzymes	 3.1 What is an enzyme? 3.2 Mode of action of enzymes 3.3 Investigating the progress of an enzyme- catalysed reaction 3.4 Factors that affect enzyme action 3.5 Comparing enzyme affinities 3.6 Enzyme inhibitors 3.7 Immobilising enzymes
UNIT-4 Cell membranes and transport	 4.1 The importance of membranes 4.2 Structure of membranes 4.3 Roles of the molecules found in membranes 4.4 Cell signalling 4.5 Movement of substances across membranes

UNIT-5 The mitotic cell cycle	 5.1 Growth and reproduction 5.2 Chromosomes 5.3 The cell cycle 5.4 Mitosis 5.5 The role of telomeres 5.6 The role of stem cells 5.7 Cancers
UNIT-6 Nucleic acids and protein synthesis	 6.1 The molecule of life 6.2 The structure of DNA and RNA 6.3 DNA replication 6.4 The genetic code 6.5 Protein synthesis 6.6 Gene mutations
UNIT-7 Transport in plants	 7.1 The transport needs of plants 7.2 Vascular system: xylem and phloem 7.3 Structure of stems, roots and leaves and the distribution of xylem and phloem 7.4 The transport of water 7.5 Transport of assimilates
UNIT-8 Transport in mammals	 8.1 Transport systems in animals 8.2 The mammalian circulatory system 8.3 Blood vessels 8.4 Tissue fluid 8.5 Blood 8.6 The heart
UNIT-9 Gas exchange	 9.1 Gas exchange 9.2 Lungs 9.3 Trachea, bronchi and bronchioles 9.4 Warming and cleaning the air 9.5 Alveoli
UNIT-10 Infectious diseases	10.1 Infectious diseases 10.2 Antibiotics

11.1 Defence against disease
11.2 Cells of the immune system
11.3 Active and passive immunity

SUBJECT - PHYSICS

<u>TOPIC/UNIT</u>	<u>CONTENT</u>
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.
Kinematics	 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 (graphical treatment). 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. 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.
Centre of mass and Gravitation	 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
Momentum	 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 (no derivation) 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 speed, orbital velocity of a satellite.
Elasticity	• Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity (qualitative idea only), Poisson's ratio; elastic energy.

Thermal Physics	 Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - 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. Thermal equilibrium and definition of temperature, zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics: gaseous state of matter, change of condition of gaseous state - isothermal, adiabatic, reversible, irreversible, and cyclic processes.
Perfect Gases and Kinetic Theory of Gases Simple Harmonic Motion and waves	 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 (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their applications. 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 derivation of expression for its time period.
Waves	• Wave motion: 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

SUBJECT - PSYCHOLOGY

TOPIC/UNIT	CONTENT
Research Methods	 Introduction Experiments Self-reports Case studies Observations Correlations
Research Methods	 Longitudinal studies The definition, manipulation, measurement and control of variables Sampling of participants Data and data analysis Ethical considerations Evaluating research: methodological issues
Biological Approach	 Introduction Core study 1: Dement and Kleitman (sleep and dreams) Core study 2: Hassett et al. (monkey toy preferences) Core study 3: Holzel et al. (mindfulness and brain scans)
Cognitive Approach	 Introduction Core study 1: Andrade (doodling) Core study 2: Baron-Cohen et al. (Eyes test) Core study 3: Pozzulo et al. (line-ups)
Learning Approach	 Introduction Core study 1: Bandura et al. (aggression) Core study 2: Fagen et al. (elephant learning) Core study 3: Saavedra and Silverman. (button phobia) Introduction

Social approach	 Core study 1: Milgram (obedience) Core study 2: Perry et al. (personal space) Core study 3: Piliavin et al. (subway Samaritans)
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SUBJECT – INFORMATION TECHNOLOGY

TOPIC/UNIT	<u>CONTENT</u>
Data Processing and information	 Data and information Quality of information Encryption Checking the accuracy of data Data processing
Spreadsheets	
	 Create a spreadsheet Test a spreadsheet Use a spreadsheet Automate operations with a spreadsheet Graphs and charts
Hardware and software	 Mainframe computers and supercomputers System software Utility software Custom written software and off-the-shelf software User interfaces
Algorithm and flowcharts, E -Security	 Edit a given algorithm Write an algorithm using pseudocode to solve a given problem Edit a given flowchart Draw a flowchart to solve a given problem Personal data Malware
Data base and file concepts	Create a databaseNormalization to third normal form (3NF)

	Data dictionaryQuery selectionFile and data management
Digital divide and Modelling	 What the digital divide is? Causes and effects of the digital divide Reducing the effects of the digital divide Modelling and simulations
Monitoring and control, Expert systems	 Monitoring technologies Control technologies How expert systems are used to produce possible solutions for different scenarios
Sound and video editing	• Sound and video editing

SUBJECT - ECONOMICS

TOPIC/UNIT	CONTENT
UNIT- 1: The basic economic ideas and resource allocation	 1.1 Scarcity, choice and opportunity cost 1.2 Economic methodology 1.3 Factors of production 1.4 Resource allocation in different economic systems 1.5 Production possibility curves (PPC) 1.6 Classification of goods and services
UNIT- 2: The price system & the microeconomy	 2.1 Demand and supply curves 2.2 Price elasticity, income elasticity and cross elasticity of demand 2.3 Price elasticity of supply 2.4 The interaction of demand and supply 2.5 Consumer and producer surplus
UNIT- 3: Government microeconomic intervention	3.1 Reasons for governmentintervention in markets3.2 Methods and Effects of governmentintervention in markets

	3.3 Addressing Income and wealth inequality
UNIT-4: The macroeconomy	 4.1 National income statistics 4.2 Introduction to the circular flow of income 4.3 Aggregate Demand (AD) and Aggregate Supply (AS) analysis 4.4 Economic Growth 4.5 Unemployment 4.6 Price stability
UNIT-5: Government macroeconomic intervention	5.1 Government macroeconomic policy objectives5.2 Fiscal policy5.3 Monetary policy5.4 Supply-side policy
UNIT - 6: International economic issues	 6.1 The reasons for international trade 6.2 Protectionism 6.3 Current account of the balance of payments 6.4 Exchange rates 6.5 Policies to correct imbalances in the current account of the balance of payments

SUBJECT - CHEMISTRY

TOPIC/UNIT	CONTENT
<u>UNIT-1</u> 1. Atomic Structure 2. Electrons in Atom	 Elements and atoms Inside the Atom Numbers of nucleons Simple electronic structure Evidence for electronic structure Sub-shells and atomic orbitals Electronic configurations Periodic patterns of atomic and ionic radii
UNIT-2 1. Atoms, Molecules and Stoichiometry	 Masses of atoms and molecules Hydrated and anhydrous compounds Accurate relative atomic masses

2. Redox Reaction	 Amount of substance Mole calculations Chemical formulae and chemical equations Solutions and concentrations Calculations involving gas volumes What is a redox Reaction? Oxidation Number Applying the Oxidation Number Rules Redox and Oxidation Number Oxidising and Reducing agents Naming Compounds
UNIT-3 1. Redox Reaction 2. Rates of Reaction 3. Chemical Bonding	 From name to formula Balancing chemical equations using oxidation numbers Disproportionation Rates of Reaction Catalysis The effect of concentration on rate of reaction The effect on temperature on rate of reaction Types of chemical bonding Ionic Bonding Covalent Bonding Shapes of Molecules Sigma and Pi Bonds Metallic Bonding
<u>UNIT-4</u> 1. Chemical Bonding 2. Enthalpy Changes	 Intermolecular Forces Hydrogen Bonding Bonding and physical properties Intermolecular Forces Hydrogen Bonding Bonding and physical properties What are enthalpy changes Standard enthalpy changes Measuring enthalpy changes Hess's law Bond energies and enthalpy changes Calculating enthalpy changes using bond
<u>UNIT-5</u> 1. Equilibria 2. Periodicity	 Reversible reactions and equilibrium Changing the positions of equilibrium Equilibrium expressions and the equilibrium constant, Kc

	 Equilibria in gas reaction: the Equilibrium constant, Kc Equilibria and the chemical industry Acid-Base equilibria Indicators and acid-base titrations Structure of Periodic Table Periodicity of physical properties Periodicity of chemical properties Oxides of Period 3 elements Effects of water on oxides and hydroxides of period 3 elements Effects of water on chlorides of periodic 3 elements Effects of water on chlorides of periodic 3 elements Deducing the position of an elements in the Periodic Table Physical Properties of Group 2 elements Reaction with Oxygen and Water Physical Properties of Group 17 Reaction of Group 17 elements Disproportionation Reaction Nitrogen Gas Ammonia and Ammonium compounds Nitrogen oxides in the atmosphere
<u>UNIT-6</u> 1. Introduction to Organic Chemistry	 Representing organic molecules Homologous series of organic compounds
2. Hydrocarbons	 Naming organic compounds Bonding in organic compounds
5. Halogenoaikanes	 Structural Isomerism
4 Alaphala asters and carbovalic acids	• Stereoisomerism
4. Alcohols, esters and carboxylic acids	• Types of organic reactions and mechanism
5 Carbonyl Compounds	Homologous groups of alkanes
5. Carbonyi Compounds	Reaction of alkanes
	• The alkene
	• Oxidation of alkenes
	Addition polymerization
	Questions practice Malting hologopoglyges
	 Making naiogenoalkane Nucleophilic Substitution Practice
	Mechanism of Reaction
	Elimination Reaction
	Homologous series of alcohols
	Reaction of alcohols
	Carboxylic Acids
	• The homologous series of aldehydes and

	 ketones Preparation of aldehydes and ketones Reduction of aldehydes and ketones Nucleophilic addition with HCN
<u>UNIT-7</u> 1. Benzene and its compounds 2 Carboxylic acids and their derivatives 3. Organic Nitrogen Compounds	 The benzene ring Reaction of arenes Phenol Reaction of phenol The acidity of carboxylic acids Oxidation of two carboxylic acids Acyl Chlorides Amines Amino acids Peptides Reaction of amides Electrophoresis

SUBJECT - WELL BEING

TOPIC/UNIT	<u>CONTENT</u>
Introduction to Wellbeing	IntroductionSalient features of wellbeing
Understanding myself	Understanding emotionsSignificance of coping styles
Essential aspects of University Application	 Significant aspects of university application both in India & Abroad Introduction to Popular Application Portals
Exploring Prospective Courses & Universities	 Discovering the desired courses Creation of Course-specific Prospective Universities List
Time management	• Importance of time-management in academic journey

	• Techniques for Managing time
Profile building	 Meaning of profile building Significance of suitable profile in university selection
Personal Essay & Statement of Purpose	Introduction to Personal essayIntroduction to Statement of purpose
Understanding myself	Practising Healthy lifestyleImpact of Screen time on health
Managing examination stress	Distinguishing the stressorsTechniques for Managing Examination stress

*If any subject is not listed, we will provide the information for it by next week.