

THE AIR FORCE SCHOOL
ANNUAL SYLLABUS – 2020-21
SECTION – B

SUBJECT – ENGLISH

S. No.	Name of the Topic	Weightage	Topic which will not be assessed
1.	READING: Comprehension passage Note making	Objective: 18 Marks Subjective: 8 Marks	-----
2.	GRAMMAR : Determiners Tenses	Objective: 8 Marks	-----
3.	WRITING SKILLS: Notice Posters Letter of complaint Letter of Enquiry Letter Placing an Order Speech Debate	Subjective: 16 Marks	-----
4.	LITERATURE HORNBILL The Portrait of a lady We're not afraid to die Discovering Tut Landscape of the soul Ailing Planet Silk Road POEMS A Photograph Laburnum Top Voice of the Rain Childhood SNAPSHOT Summer of beautiful... The Address Albert Einstein at School Birth	Objective: 14 Marks Subjective:16 Marks	-----

SUBJECT – PHYSICS

S. No.	Name of the Topic/Chapter	Weightage	Topic which will not be assessed
1.	Chapter–2: Units and Measurements Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. Dimensions of physical quantities, dimensional analysis and its applications.	5	
2.	Chapter–3: Motion in a Straight Line Elementary concepts of differentiation and integration for describing motion, uniform and non- uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical treatment).	5	Frame of reference, Motion in a straight line: Position-time graph, speed and velocity.
3.	Chapter-4: 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, relative velocity, 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.	6	
4	Chapter–5: Laws 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).	7	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.
5	Chapter–6: 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: conservation of mechanical energy (kinetic and potential	6	

	energies); non-conservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.		
6	<p>Chapter–7: System of Particles and Rotational Motion</p> <p>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 (no derivation).</p>	4	Statement of parallel and perpendicular axes theorems and their applications.
7	<p>Chapter–8: Gravitation 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, Geo- stationary satellites.</p>	7	Kepler's laws of planetary motion,
8	<p>Chapter–9: Mechanical Properties of Solids</p> <p>Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus,</p>	3	Elastic behaviour, shear modulus of rigidity, Poisson's ratio; elastic energy.
9	<p>Chapter–10: Mechanical Properties of Fluids</p> <p>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 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.</p>	9	
10	<p>Chapter–11: Thermal Properties of Matter</p> <p>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. thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law, Greenhouse effect.</p>	3	Heat, temperature, Heat transfer-conduction, convection and radiation,
11	Chapter–12: Thermodynamics	3	Heat engine and

	Thermal equilibrium and definition of temperature (zeroth law of thermodynamics), heat, work and internal energy. First law of thermodynamics, isothermal and adiabatic processes. Second law of thermodynamics: reversible and irreversible processes		refrigerator.
12	Chapter–13: Kinetic Theory 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 equipartition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.	2	
13	Chapter–14: Oscillations Periodic motion - time period, frequency, displacement as a function of time, periodic functions. Simple harmonic motion (S.H.M) and its equation; 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. Free, forced and damped oscillations (qualitative ideas only), resonance.	5	
14	Chapter–15: 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 and organ pipes	5	Fundamental mode and harmonics, Doppler Effect

SUBJECT – CHEMISTRY

S. No	UNIT	Weightage	Topic which will not be assessed
1.	Some Basic Concepts of Chemistry	3	Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules.
2.	Structure of Atom	5	Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations

3.	Classification of Elements and Periodicity in Properties	5	Significance of classification, brief history of the development of periodic table,
4.	Chemical Bonding and Molecular Structure	7	Nil
5.	States of Matter: Gases and Liquids	5	liquefaction of gases, critical temperature, kinetic energy and molecular speeds (elementary idea), Liquid State- vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations)
6.	Chemical Thermodynamics	5	Heat capacity and specific heat capacity, Criteria for equilibrium
7.	Equilibrium	6	hydrolysis of salts (elementary idea), Henderson Equation
8.	Redox Reactions	5	applications of redox reactions
9.	Hydrogen	4	Preparation, properties and uses of hydrogen, hydrogen peroxide - preparation, reactions and structure use;
10.	s -Block Elements	5	Preparation and Properties of Some Important Compounds: Sodium Carbonate, Sodium Chloride, Sodium Hydroxide and Sodium Hydrogen carbonate, Biological importance of Sodium and Potassium. Calcium Oxide and Calcium Carbonate and their industrial uses, biological importance of Magnesium and Calcium.
11.	Some p -Block Elements	4	Some important compounds: Borax, Boric acid, Boron Hydrides, Aluminium: Reactions with acids and alkalies, uses. Carbon: uses of some important compounds: oxides. Important compounds of Silicon and a few uses: Silicon Tetrachloride, Silicones, Silicates and Zeolites, their uses.
12.	Organic Chemistry: Some basic Principles and Techniques	8	methods of purification, qualitative and quantitative analysis
13.	Hydrocarbons	8	free radical mechanism of halogenation, combustion and pyrolysis.
14.	Environmental Chemistry	-	Entire chapter

SUBJECT – BIOLOGY

S. No.	Name of the Topic	Weightage	Topic which will not be assessed
1	Chapter-1: The Living World	15	Taxonomy and systematics; tools for study of taxonomy- museums, zoological parks, herbaria, botanical gardens, keys for identification.
2	Chapter 2: Biological Classification		Nil
3	Chapter-3: Plant Kingdom		Angiospermae; Angiosperms - classification up to class, characteristic features and examples.
4	Chapter 4:Animal kingdom		Nil
5	Chapter-5: Morphology of Flowering Plants	8	Morphology and modifications: Morphology of different parts of flowering plants: root, stem, leaf, fruit and seed. Description of family: - Fabaceae
6	Chapter 6 – Anatomy of flowering plants		Anatomy and functions of different tissues and tissue systems in dicots and monocots. Secondary growth.
7	Chapter 7 – Structural organisation in animals		Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect (cockroach, earthworm and frog)
8	Chapter 8 – Cell: The unit of life	15	Nil
9	Chapter 9: Biomolecule		Nil
10	Chapter 10: Cell cycle and cell Division		Chapter-11: Transport in Plants . Movement of water, gases and nutrients; cell to cell transport, diffusion, facilitated diffusion, active transport; plant-water relations, imbibition, water potential, osmosis, plasmolysis; long distance transport of water - Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; transpiration, opening and closing of stomata; Uptake and translocation of mineral nutrients - Transport of food, phloem transport, mass flow hypothesis.
11	Chapter 13: Photosynthesis in higher plants	15	Chapter-12: Mineral Nutrition, Essential minerals, macro- and micronutrients and their role; deficiency symptoms; mineral toxicity; elementary idea of hydroponics as a method to study mineral nutrition; nitrogen metabolism, nitrogen cycle, biological nitrogen fixation.

12	Chapter 14: Respiration in higher plants		NIL Chapter-15: Plant - Growth and Development, Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; Seed dormancy; vernalisation; photoperiodism
13	Chapter 17: Breathing and Exchange of gases	17	NIL Chapter-16: Digestion and Absorption Alimentary canal and digestive glands, role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; calorific values of proteins, carbohydrates and fats; egestion; nutritional and digestive disorders - PEM, indigestion, constipation, vomiting, jaundice, diarrhoea
14	Chapter 18: Body fluid and circulation		
15	Chapter-19: Excretory product and their elimination		Nil
16	Chapter-20: Locomotion and Movement		Chapter-20: Locomotion and Movement Types of movement - ciliary, flagellar, muscular; Skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.
17	Chapter-21: Neural Control and Coordination		Chapter-21: Neural Control and Coordination , reflex action; sensory perception; sense organs; elementary structure and functions of eye and ear
18	Chapter 22: Chemical Control and Coordination		Nil

SUBJECT – MATHS

S. No.	Name of the Topic	Weightage	Topic which will not be assessed
	Unit - I : Sets and Functions		
1	Chapter 1: Sets	17	<ul style="list-style-type: none"> • Difference of sets • Complement of a set • Properties of Complement
2	Chapter 2: Relations and Functions		<ul style="list-style-type: none"> • Cartesian product of the set of reals with itself to $R \times R \times R$ • Sum, difference, product and

			quotient of functions
3	Chapter 3: Trigonometric Functions		<ul style="list-style-type: none">General solutions of trigonometric equations of the type: $\sin y = \sin a$, $\cos y = \cos a$, $\tan y = \tan a$
	Unit – II : Algebra		
4	Chapter 5: Complex Numbers and Quadratic Equations	25	<ul style="list-style-type: none">Polar representation of complex numbersSquare root of a complex number
5	Chapter 6: Linear Inequalities		NIL
6	Chapter 7: Permutations and Combinations		<ul style="list-style-type: none">Derivation of formulae for ${}^n P_r$ and ${}^n C_r$
7	Chapter 9: Sequences and Series		<ul style="list-style-type: none">Formulae for the following special sums $\sum k, \sum k^2, \sum k^3$
	Unit – III : Coordinate Geometry		
8	Chapter 10: Straight Lines	17	<ul style="list-style-type: none">Shifting of originEquation of family of lines passing through the point of intersection of two lines
9	Chapter 11: Conic Sections		<ul style="list-style-type: none">A point, a straight line and a pair of intersecting lines as a degenerated case of a conic section
10	Chapter 12: Introduction to Three Dimensional Geometry		NIL
	Unit – IV : Calculus		
11	Chapter 13: Limits and Derivatives	12	NIL
	Unit – VI : Statistics and Probability		
12	Chapter 15: Statistics	9	<ul style="list-style-type: none">Analysis of frequency distributions with equal means but different variances.
13	Chapter 16: Probability		<ul style="list-style-type: none">Axiomatic (set theoretic) probability, connections with other theories of earlier classes

SUBJECT – IP

S No	Unit	Weightage	Portion which will not be Assessed
1.	Unit 1 Introduction to computer system	10	-
2.	Unit 2 Introduction to Python	25	While Loop
3.	Unit 3 Database concepts and the Structured Query Language	30	Foreign key. DROP TABLE, ALTER TABLE, UPDATE, DELETE
4.	Unit 4 Introduction to Emerging Trends	5	

SUBJECT-HOME SCIENCE

S. NO.	UNIT	CHAPTERS	Weightage	Portion which will not be Assessed
1	Introduction to Home Science	Introduction to Home Science	02	
2	Understanding oneself: Adolescence	Ch.- Understanding the Self. Ch.- Food, Nutrition, Health and Fitness Ch. - Management of Resources Ch.- Fabric Around us Ch-Media and Communication Technology	20	Effective communication skills
3	Understanding Family, Community and Society	Ch. - Concerns and needs in diverse contexts:	15	Relationships and interaction with significant others
4	Childhood	Ch.-Survival, Growth and Development Ch.- Nutrition, Health and Wellbeing Ch.- Our Apparel	15	Care and education
5	Adulthood	Ch.- Health and Wellness Ch.- Financial Management and planning Ch.- Care and Maintenance of fabrics	18	Perspective in Communication Individual Responsibilities and Rights

SUBJECT- PSYCHOLOGY

S. No.	Name of the Topic	Weightage	Topic which will not be assessed
1	Chap 1 : What Is Psychology?	10	Nil
2	Chap2 : Methods of Enquiry In Psychology	13	Nil
3	Chap3 : Biological Bases of behavior	11	Heredity : Genes and behavior Cultural basis Concept of culture
4	Chap 4 : Human Development	09	Nil
5	Chap 5 : Sensory , Attentional and Perceptual processes	09	Visual sensation Auditory sensation
6	Chap 6 :Learning	10	Concept learning Transfer of learning Learning styles Application of learning principles
7	Chap 7 : Memory	08	Knowledge representation and organization

SUBJECT– PHYSICAL EDUCATION

S. No.	Name of the Unit	Weightage	Topic which will not be assessed
1	Unit I: Changing Trends & Career in Physical Education	7	-
2	Unit II: Olympic Value Education	9	-
3	Unit III: Physical Fitness, Wellness & Lifestyle	8	-
4	Unit IV: Physical Education & Sports for CWSN	5	-
5	Unit V: Yoga	8	-
6	Unit VI: Physical Activity & Leadership Training	5	-
7	Unit VII: Test, Measurement & Evaluation	7	-
8	Unit VIII: Fundamentals of Anatomy, Physiology & Kinesiology in Sports	9	-
9	Unit IX: Psychology & Sports	4	-
10	Unit X: Training and Doping in Sports	8	-