

Major Kalshi Classes

INDIAN COST GUARD Online Course

Syllabus Session 2020-2021

ENGLISH

Sr. No.	Chapter
1	Time & Tense
	Kinds of Tense
	Sequence of Tense
	Uses of Tense
2	Conditional Sentences
3	Question Tag
4	Verb
	Transformation
	Auxiliary
	Modals
	Reflexive
	Causative verbs
5	Finite & Non-finite Verbs
	Non finite
	Participle: Kinds of participle, Use of Participle
	Gerund: use of Gerund
	Infinitive: Use of Infinitive
6	Voice
	Transformation
	Uses
7	Narration
	Assertive
	Interrogative
	Imperative
	Optative
	Exclamatory
8	Noun
	Kinds of Noun
	Proper of Noun
	Common Noun
	Collective Noun
	Material
	Abstract
	Formation of Abstract Noun, Verb-Noun, Adjective Noun, Common Noun Abstract noun
	Noun Gender
	Noun Number
	Noun Case

9	Pronoun
	Kinds of Pronoun
	Use of Pronoun
10	Adjective
	Kinds of Adjective
	Adjectives order before noun
	Adjectives position
	Comparison of degree
	Uses of Adjective
11	Articles
	Kinds of Articles: Use of A/AN
	Use of The
12	Adverb
	Simple
	Interrogative
	Relative
	Position of Adverb
	Inversion
13	Preposition
	Kinds of preposition: Simple
	Compound
	Phrase Preposition
	Participle Preposition
	Relation Expressed by Preposition
	Words followed by preposition
	Correct use of Preposition
14	Conjunction
	Kinds of Conjunction: (a) Co-ordinating conjunction (b) Sub-ordinating conjunction
	Uses of Conjunction
15	Syntax (Subject Verb agreement)
16	Rearrangement of words in a sentence
17	Arrangement of sentences
18	Cloze Test/Fillers
19	Reading Comprehension
20	Idioms & Phrases
21	Synonyms
22	Antonyms
23	One word substitution
24	Spelling Error

ARITHMETIC

Sr. No.	Chapter
1	Number System
	Introduction
	Place value & face value, classification
	Rules of divisibility
	Division based question
	Addition of natural no. series
	Miscellaneous
2	Square Root & Cube Root
	Introduction
	Difference between Square & square roots
	To find, square & square roots
	Square roots, based question
	Cube & cube roots
	To find cube & cube roots
Cube & cube roots based question	
3	Simplification
	V-BODMAS-rule
	Fractions-based
	Factorization
4	H.C.F. & L.C.M
	H.C.F.
	Definition, to find H.C.F. of various types of numbers
	H. C. F. based question
	L.C.M.
	Definition, to find L.C.M. of all types of numbers
	L. C. M. based questions
Relation between L.C.M. & H.C.F.	
5	Decimal Fraction
	Vulgar fraction
	Types
	Operations
	Comparisons (Increasing & decreasing order)
	Fractions based question
	Types terminating and non terminating
Operations	
6	Surds & Indices
	Introduction
	Basic rules of surds
	Surds based questions
	Indices based questions
7	Percentage
	Basic concept & rules to find percentage
	Examination based Questions, increasing, decreasing
	Election based Questions

	Income expenditure & saving based questions
	Vane-diagram based Questions
	Population based question
	Menstruation based question
	Miscellaneous
8	Profit and Loss
	Introduction -what is profit and loss
	To find profit and loss
	To find S. P. and C. P. on profit and loss
	Successive profit % based Questions
	Successive loss %
	Discount
	Equivalent discount
	To find M. R. P.
9	Average
	Introduction of average
	How to find average
	Average of numbers
	Average of ages & weights etc
	Miscellaneous
10	Ratio & Proportion
11	Simple and Compound Interest
	Introduction
	Definition of interest
	Difference between SI & CI
	Rules to find S I & amount
	Rules to find C I & Amount
12	Time and Work
	Relation between workers, works and time
	Ratio based question
	Capacity based question
	Wages based question
	Pipe & cistern bases question
13	Speed, Time and Distance
	General concept and rule and how to find speed, distance and time
	Rules and question of general speed
	Train based question
	Boat and stream
	Average speed
14	Mensuration - I
	2D Unit-1st
	Triangle
	Quadrilaterals
	Circle
	Miscellaneous
15	Mensuration - II
	3D Unit-2nd
	Cuboids Cube
	Cylinder, Cone
	Sphere, Prism, pyramid, frustum
	Miscellaneous
16	Factor

	Rules of factorization
	Factorization based question
	Miscellaneous
17	Geometry
	Line and parallel lines
	Triangles
	Quadrilaterals
	Circles
	Tangent line
18	Trigonometry
	Measures of angles
	T. Ration
	Identities
	Sum & different of multiple of angles based question
	Height and distance
	Charts and tabulation
19	Allegation
20	Partnership
21	Algebra
22	Quadratic Equation and Inequalities
23	Statistics
24	Data Interpretation
25	Permutation and Combination
26	Probability
27	Algorithm
28	Set theory

Reasoning	
Sr. No.	Chapter
1	Coding-Decoding
	Letter coding
	Direct letter coding
	Number/Symbol coding
	Deciphering message word codes/numeral codes
	Substitution
2	English Alphabet
	Arrangement of word according to dictionary
	Alpha-numeric sequence
	Letter-word problems
	Rule detection
3	Number Series
	To find a missing term
	To find the number that does not follow the pattern
4	Analogy
	Direct Simple analogy
	Completing the analogous pair
	Choosing the analogous pair
	Choosing a similar word
5	Classification
	Choosing the odd word
	Choosing the odd pair of words
	Choosing the odd letter group
	Choosing the off number/pair of numbers
6	Blood Relations
	Deciphering from jumbled-up descriptions
	Relation puzzles
	Coded relations
7	Direction and Distance
	Based on final direction
	Based on displacement
8	Sitting Arrangement
	Arrangement around a circle
	Arrangement in a line or others
9	Syllogism
	Two premise arguments
	More than two premises arguments
10	Cube and Dice
	Some facts about cube
	Counting the number of cubes/blocks in the given figures
	Dice
	Dice formation

	Types of dice
11	Clock and Calendar
12	Word Arrangement
	Arrangement around a circle
	Arrangement in a live or others
13	Number, Ranking and Time Sequence Test order sequence
	Number Test
	Ranking test
	Time sequence test
14	Mathematical Operations
15	Missing Term
16	Mathematical Reasoning
17	Venn Diagrams
	Universal Affirmative
	Universal Negative
	Particular
	Miscellaneous
	Venn Diagrams formed by using different geometrical figures
18	Series
	Rotation
	Design/Element
19	Figural Analogy
	Based on shape
	Based on structure
	Based on number
	Based on mirror image
	Based on water image
	Rotation of figure
Movement of figure	
	Replacement of positions of element
20	Figural Classification
	Choosing the odd Shape
	Choosing the odd pair of words
	Choosing the odd letter group
	Choosing the off number/pair of numbers
21	Figure Completion
22	Embedded Figures
23	Grouping of Identical figures
24	Paper Folding and Cutting
25	Mirror Image
	Letter/number images
	Geometrical images
26	Water Image
	Letter/number images
	Geometrical images
27	Formation of Figure
28	Counting figures

G.K.

Ancient History

1.	fl akq /kkVh I H; rk@ Indus Valley civilization
	ifjp; @Introduction
	i æçk LFkyk dsuke@Name of main places.
	I kekft d] vkfFKd , oajktuſrd thou@ Social Economic and political life.
2.	oſnd dky@ Vedic Period
	on @Veda
	mion@ Upveda
	mifu"kn@Upanishada
	I kekft d] vkfFKd , oajktuſrd thou@Social Economic and Political Life
	mRrj oſnd dky@Later Vedic Period
3.	NBha 'knh b] k i 7@6th Century B.C
	c) dk thou ifjp;] f'k{kk o I æhr@
	Introduction to the life of Bhuddha, Education and Sangiti
	egkohj Lokeh dk thou ifjp;] f'k{kk o I æhr@
	Introduction to Mahavir Swami, Education and Sangiti
4.	ekſ ðky , oamRrj ekſ l dky@Maurya and Post Mourya period
	i æçk oäk o 'kkl d@Main dynasty and Ruler
	ekſ ðäk ds 'kkl d @Rulers of Maurya dynasty
	pUnxqr@Chandra gupta
	fçnd kj@Bindusar
	v'kkl@Ashoka
	mRrj ekſ ðky@Post Maurya Period
	'kkoäk@Shunga dynasty
	d.o oäk@Kanv dynasty
	vkll/k I krokgu@Andhra Satvahan
5.	xqr oäk , oamRrj xqr oäk@Gupta dynasty and post gupta dynasty
	i æçk 'kkl d@Main Ruler
	Jhxqr@Srigupta
	pUnxqr i Fke@Chandragupta 1st
	I eqxqr@Samudragupta
	pUnxqr IInd @Chandragupta IInd
	dçkj xqrk@Kumargupta
	xqrkRrj dky@Post gupta
	i ç; Hkr oäk@Pushyabhuti dynasty /ç"kb/ku@Harshavardhana)
	dç i æçk jktoäk o muds I æFki d@Some main dynasties and their founder.
6.	e/; dkyhu bfrgkl @Medieval History
	vjc vkOe.k@Invasion of Arab

	egEen fcu dkl e@Mohammad Bin Kasim
	egem xtuo@Mahmood Ghaznavi
	ekEen xkj@Mohammad Gori
	fnYyh I Yrur@Delhi Sultanate
	ifjp; @Introduction
	iedk odk@Main dynasty
	iedk 'kl d@Main Ruler
7.	eqy I ket; @Mughal Empire
	, d ifjp; @An Introduction
	iedk 'kl d@Main Ruler
	I jh odk@Suri dynasty
	mRrjorkz eqy 'kl d@Later mughal emperor
8.	ejkBg , oafI D[k xq @Maratha and Sikkha Guru
	ejkBg odk , d ifjp; , oaf'kokth@An Introduction of Marathas and Shivaji
	fl D[k xq vks dsuke o dk; @Name of Sikkha Gurus and their work
9.	vk/kud bfrgkl @Modern History
	; jkh; dEi fu; odk vkxeu@Arrival of European Companies
	iqkkyh@Portuguese
	Mp@Dutch
	vaxt @British
	Ykd hl h@France
	Mfu'k@Denis
10.	18oh 'krkOh dsu; s Lok; Rr jkT; @New Autonomous states 18 th Century
	caky@Bengal
	gnjkcn@Hyderabad
	eI j@Mysore
	Iykl h dk ; @Battle of Plassey
	cDI j dk ; @Battle of Buxar
11.	vkfkd iko@Economic Impact
	/ku fu"dkl u fl)kr@Wealth Drain Theory
	LFk; h cksLR@Permanent Settlement
	jS; rokMh cksLR@Raiyyatwari Settlement
	egkyokMh cksLR@Mahalwari Settlement
12.	I ket'd vj /kfed I qkj vkkyu@Social and Religious reform movement
	ifjp; @Introduction
	vk; I ket@Aryasamaj
	ikfuk I ket@Prarthna Samaj
	cge I ket@Brahmo samaj
	jked".k fe'ku@Ramkrishna Mission
13.	1857 bD dk fonk o vU; fonk@Revolt of 1857 A.D. and other revolts
	fonk ds dkj.k@Causes of revolt
	I ket'd @Social

	vkfFkd@Economic
	jktufrd@Political
	dN iedk fontg ds dsh@Some main Centres of revolt
14.	vk/kud f'k(k dk id kj , oahkjr; I ekpkj i =k dk bfrgkI @Expansion of modern education and history of Indian newspapers
15.	Hkjr; jk'Vh; dkad vkj ml ds iedk vf/košku rFk vU; I hFku@Indian national congress and its major session and other Institution
16.	Hkjr; Lorark I h'k@Indian Freedom Struggle
	caKy foHktu@Partition of Bengal
	eLye yhx@Muslim League
	dkad dk I jr vf/košku@I.N.C session of Surat
	y[kuA iDV@Lucknow Pact
	gk: y yhx vlnkyu@Home rule league movement
	jkjV , DV@Rowlatt Act
	tfy; kckx gr; kdk.M@Jaliawala bagh massacre
	f[kyQr vlnkyu@Khilafat Movement
	vl g; lx vlnkyu@Non-Co-operation Movement
	I kbeu deh'ku@Simon Commission
	xkyest I feyu@Round Table Conference
	I kink; d i pK@Communal Award
	fOII fe'ku@Cripps Mission
	Hkjr NkMks vlnkyu@Quit India Movement
	ooy; kstuk@Wavell Plan
	dscu/ fe'ku@Cabinet Mission
	yMZ ekm.V cV; kstuk o Lorark@Lord Mountbatten Plan and Independence
	dN iedk opu o ukj@Some Important Slogans
17.	xouj tujy@Governor General
18.	iedk rF; @Main Fact

Polity

19	भारत का संवैधानिक विकास / Constitutional development of India
20	संविधान निर्माण / Making of the constitution
	देशी स्रोत / Indian Source
	विदेशी स्रोत / Foreign Source
21	प्रस्तावना / The Preamble
	संविधान की विशेषतायें / Properties of Constitution
22	संघ एवं उसकी सीमा / Union and its Territory
23	नागरिकता / Citizenship
24	मौलिक अधिकार / Fundamental Right
25	राज्य के नीति निर्देशक तत्व / Directive Principle of state
26	मूलकर्तव्य / Fundamental Duties
27	संघीय प्रशासन / Union Administration
	<ul style="list-style-type: none"> राष्ट्रपति / President आधिकार एवं शक्ति / Rights and power

	<ul style="list-style-type: none"> • महाभियोग प्रक्रिया / Impeachment procedure • उपराष्ट्रपति / Vice-President • राज्यसभा / Rajya Sabha • लोकसभा / Lok Sabha • प्रधानमंत्री एवं मंत्रि परिषद / Prime Minister and Council of Ministers • भारत के महान्यायवादी / Attorney General of India. • वित्तआयोग / Finance Commission • नीति आयोग / NITI Ayog • निर्वाचन आयोग / Election Commission • संघलोक सेवा आयोग / Union public Service Commission • अंतर्राज्यीय परिषद / Inter State Council • राष्ट्रीय विकास परिषद / National development Council • केन्द्रीय सतर्कता आयोग / Central Vigilance Commission. • राजभाषा / Official Language.
28	<p>राज्य प्रशासन / State Administration</p> <ul style="list-style-type: none"> • राज्यपाल / Governor एवं उसकी शक्तियां / ans his powers • राज्य विधायिका / State Legislature • विधानसभा / Legislative Assembly of State • मुख्यमंत्री एवं मंत्रिपरिषद / Chief Minister and its Council of Ministers
29.	केन्द्र राज्य संबंध / Central State Relation
30.	संवैधानिक एवं अन्य संस्थायें / Constitutional and other Institutions
31	स्थानीय प्रशासन / Local Administration
32	सर्वोच्च न्यायालय एवं उच्च न्यायालय / Supreme Court and High Court
33.	आपातकालीन उपबंध / Constitutional Amendment / Emergency Provisions
34	संविधान की अनुसूचियां एवं अनुच्छेद तथा अन्य तथ्य / Schedules and Articles of Constitution and others Facts

Geography	
35.	ब्रह्माण्ड एवं सौरमण्डल / Universe and Solar System ग्रह / Planet, उपग्रह / Satellite, उल्का पिण्ड / Meteorite, क्षुद्रग्रह / Asteroids, धूमकेतु / Comet चन्द्रमा / Moon, पृथ्वी / Earth
36.	पृथ्वी की गतियां / Motion and Revolution of Earth
37.	पृथ्वी की आंतरिक संरचना / Internal Structure of the Earth पृथ्वी की बाह्य संरचना / Outer structure of the Earth.
38.	शैल, पठार व मरुस्थल / Rocks, Plateau and desert – Igneous Rock/ आग्नेय शैल – Sedimentary Rock/ अवसादी शैल – Metamorphic Rock/ कायांतरित शैल
39.	महाद्वीप / Continents
40.	भूकम्प एवं ज्वालामुखी / Earthquake and Volcano
41.	जलमण्डल / Hydrosphere <ul style="list-style-type: none"> • महासागर / Ocean • सागर / Sea • प्रमुख गर्त / Main Trench • जल संधियाँ / Straits • प्रमुख जलधारायें / Oceanic currents • जलप्रपात / Waterfalls • प्रमुख झीलें / Main Lakes • प्रमुख नदियाँ / Main Rivers

	<ul style="list-style-type: none"> • प्रमुख नहरें/ Main Canals
42.	वायुमण्डल /Atmosphere <ul style="list-style-type: none"> • मण्डलों के नाम / Name of Spheres • वायुदाब पेटियाँ/ Wind pressure belts • स्थानीय पवनें/ Local winds • प्रमुख चक्रवात/ Main Cyclones • बादल के प्रकार/ Types of Clouds
43.	प्रमुख शहर व नदियों के किनारे बसे शहर तथा पवनें Main cities, Cities located on river banks and winds
44.	भारत का परिचय / Introduction of India
45.	प्रमुख दर्रे / Main Passes
46.	प्रमुख नदियाँ, बाँध, परियोजनायें तथा झीलें / Main Rivers, Dams, Projects and Lakes
47.	भारत की प्रमुख मिट्टियाँ / Main Soils of India
48.	भारतीय परिवहन / Indian Transport
49.	वन एवं राष्ट्रीय उद्यानों के नाम / Forest and National Parks
50.	प्रमुख खनिज / Main Minerals

Miscellaneous	
51	Economic
52	Abbreviation
53	Sports
54	Award and Prizes
55	Monument
56	Terminology (Geographical/ Astronomical Term etc)
57	UNO
58	Indian Armed forces
59	States and its UT
60	Research centre and space programme
61	News agencies
62	Invention & Discoveries
63	Continently
64	National/ International Days
65	Nation & International Organisation
66	Books & Author
67	World planets & animals
68	Religion & Communities
69	Who's who
70	Dance & Festival
71	Current Affairs
72	Computer
73	Miscellaneous

MATHS

Sr. No.	Chapter
1	Binary System of Numbers
	(a) Fundamental
	(b) Convert Binary into decimal
	(c) Convert decimal into binary
	(d) Operation of Binary
2	Logarithms
	(a) Fundamental
	(b) Graphs of Logarithm
	(c) Properties of Logarithm
3	Set Theory & Relation
	(a) Fundamental of Set
	(b) Types of Set
	(c) Operation of set (Union, Intersection, Disjoint set, Difference of two set, Complement set, Symmetric set)
	(d) Venn Diagrams
	(e) Fundamental of Relation
	(f) Types of relation (Symmetric, Reflexive, Transitive, Equivalence, Inverse relation)
4	Complex Number
	(a) Fundamental
	(b) conjugate
	(c) Modulus + argument + euler's form
	(d) Polar form, De-moivre's theorem, square root, cube root of unity
	(e) Locus
5	Quadratic Equations
	(a) Fundamental
	(b) Sum and Product of root of quadratic equation
	(c) Discriminant
	(d) condition for common roots
	(e) Graphs of quadratic equation
	(f) Sign of root
	(g) Quadratic inequalities
6	Sequence and Series
	(a) Fundamental
	(b) nth term, sum of the term, mean of A.P, G.P. and H.P.
	(c) Properties of A.P., G.P., H.P.
	(d) Relation between A.M., G.M., H.M.
	(e) Arithmetical & Geometrical Series
	(f) Summation of Series (Miscellaneous Series)
7	Permutation and Combination
	(a) Fundamental

	(b) Factorial
	(c) FPC (FPA, FPM)
	(d) Permutation (Fundamental, Problem on line or row, Problem on word's & digit, Problem on C.P., Repetition Permutation, problems on dictionary)
	(e) Combination (Fundamental, Problem on Geometry, Problem on Groups & committee, Selection of things when indetical and different things are present)
8	Probability
	(a) Sample space
	(b) Event
	(c) Concept of probability (problems on coin, problem on dice, problem on cards, Problem on leap years and Non leap Year, Problem on words, problem on digits odd's against and favour)
	(d) Problem on conditional Porbability
	(e) Theorem of total probability
	(f) Baye's theorem
	(g) Binomial distribution
	(h) Problem on hitting target or solving question
9	Binomial Theorem
	(a) Fundamental
	(b) General term
	(c) Middle term
	(d) Coefficient and Independent term
	(e) Binomial Theorem for any index
	(f) Properties of Binomial Theorem
10	Matrices
	(a) Fundamental
	(b) Type of matrix
	(c) Operation of Matrix
	(d) Transpose matrix
	(e) Symmetric and skew symmetric matrix
	(f) Minor and cofactor of matrix
	(g) Adjoint Matrix
	(h) Singular & non singular matrix
	(i) Orthogonal Matrix
	(j) Inverse matrix
	(k) System of linear and Homogeneous equation
11	Determinants
	(a) Fundamental
	(b) Properties of Determinant
	(c) Differentiation of Determinant
	(d) Cramer rule
12	Real Numbers and Functions of Real Variables
	(a) Fundamental
	(b) Graph's

	(c) Domain and range
	(d) Even and odd function
	(e) Mapping (one-one, many one, onto, into)
	(f) Inverse function
	(g) Composition function
	(h) Periodic function
13	Limits, Continuity and Differentiability
	(a) Fundamental
	(b) Algebraic limit
	(c) Trigonometric Limit
	(d) Logarithm limit
	(e) Exponential Limits
	(f) L. Hospital rule
	(g) Sandwich theorem
	(h) Continuity of function
	(i) Differentiability of Function
14	Differentiation
	(a) Fundamental
	(b) Chain rule
	(c) Diff. of Inverse Trigonometric Function
	(d) Diff. of implicit function
	(e) Diff. of logarithmic function
	(f) Diff. of infinite term
	(g) Diff. of $y_1=f(x_1)$ w.r.f $y_2=g(x)$
	(h) Second order derivative
	(i) Parametric Differentiation
15	Application of Derivatives
	(a) Rate of change
	(b) Tangent and normal
	(c) Angle between two curve
	(d) Monotonic Function (function))
	(e) Increasing and decreasing function
	(f) Maxima and Minima (Local max and min. Absolute max and min. point of inflection)
	(g) Rolle's theorem Mean value theorem
16	Indefinite Integrals
	(a) Fundamental
	(b) Integration by substitution
	(c) Integration of rational and irrational function integration of parts
17	Definite Integrals
	(a) Fundamental
	(b) Properties of definite integration
	(c) Newton's Leibnitz theorem
	(d) Limit as a sum
	(e) Wallis's method

18	Area Bounded by Region
	(a) Area along y-axis
	(b) Area along x-axis
	(c) Area bounded by two curve
19	Differential Equations
	(a) Order and degree
	(b) Formation of D.E.
	(c) D.E. of first degree and order
	(d) D.E. of first degree and second order
	(e) Linear D.E.
	(g) Bernoulli's equation
20	Trigonometric Ratios, Identities & Equations
	(a) Fundamental
	(b) Signs of trigonometric ratio
	(c) Formula based on multiple and sub-multiple angles
	(d) Trigonometry ratio in triple angle
	(e) Greatest and least value
	(f) Trigonometric equation
21	Inverse Trigonometrical Function
	(a) Fundamental
	(b) Properties of Inverse Trigonometric Function
22	Properties of Triangle
	(a) Sine and Cosine rule
	(b) Projection formula
	(c) Semi angle formula
	(d) Area of triangle
	(e) Circum radius, inradius, ex-radius
23	Height and Distance
	(a) Angle of elevation and Depression
	(b) Geometrical Properties and formula for a triangle
24	2D Analytical Geometry
	(a) Fundamental
	(b) Center (Centroid, Orthocentre, Circumcentre, Incentre)
	(c) Area of triangle
	(d) Section formula
	(e) Locus
25	Straight Line
	(a) Equation of straight line in different form
	(b) Angle between two lines
	(c) Family of lines
	(d) Co-ordinate of foot, image and length
	(e) Equation of line in parallel and perpendicular condition
	(f) Condition for concurrent lines
	(g) Distance between two parallel line
26	Circle & Family of Circle

	(a) Fundamental
	(b) Equation of circle in different form
	(c) Angle between two circle
	(e) Equation of tangent and normal
27	Parabola
	(a) Fundamental
	(b) Properties of Parabola
	(c) Equation of Tangent and normal
28	Ellipse
	(a) Fundamental
	(b) Properties of ellipse
	(c) Equation of Tangent and normal
29	Hyperbola
	(a) Fundamental
	(b) Properties of Hyperbola
	(c) Equation of Tangent and normal
30	Vector
	(a) Fundamental
	(b) Dot product
	(c) Cross Product
	(d) Scalar triple product
	(e) Vector triple product
	(f) Angle between two vectors
	(g) Projection of vectors
	(h) work done and moment
31	3D Analytical Geometry
	(a) Fundamental
	(b) Equation of straight line in space (angle between to lines, SD between two lines, condition of intersection of two, condition for coplanar lines)
	(c) General equation of plane, angle between two lines and angle between line and plane in different form
	(d) Family of plane
	(e) angle between two plane and plane and line
	(f) Co-ordinate of foot, image and length
	(g) Equation of sphere
32	Statistics
	(a) Mean, median, mode of grouped and ungrouped data
	(b) Variance, standard deviation, coefficient of variation
	(c) Correlation (Co-valance, Coefficient of correlation)
	(d) Regression lines (Regression, line of x any, Regression line of y on x angle between two lines)

PHYSICS

Sr. No.	Chapter
1	UNIT, DIMENSION AND MEASUREMENT
	a. The international system of units
	b. Measurement of length
	c. Time
	d. Accuracy
	e. Precision of instruments and errors in measurement
	f. Significant figures
	g. Dimension of physical quantities
	h. Dimensional formulae and Dimensional equations Dimensional analysis and its applications.
2	BASIC KNOWLEDGE OF VECTOR
	a. Type of Vector
	b. Scalars and vectors
	c. Addition and subtraction of vectors
	d. Resolution of vectors
	e. Dot product
	f. Cross product etc.
3	MOTION IN 1-D
	a. Position Path length and displacement
	b. Average velocity and average speed
	c. Instantaneous velocity and speed
	d. Acceleration Kinematics equations for uniformly accelerated motion.
4	MOTION IN 2-D
	a. Relative velocity Motion in a plane
	b. Motion in plane with constant acceleration
	c. Relative velocity in two dimension
	d. Projectile motion
	e. Uniform circular motion
5	LAWS OF MOTION
	a. Fundamental
	b. The law of inertia
	c. Newton's first law of motion
	d. Newton's second law of motion
	e. Newton's third law of motion
	f. Conservation of momentum
	g. Equilibrium of a particle
	h. Common forces in mechanics
	i. Circular motion
	j. Friction as the Component of Contact Force
	k. Kinetic Friction
	l. Static Friction Laws of Friction
6	WORK, ENERGY AND POWER

	a.	Work and kinetic energy
	b.	The work-energy theorem
	c.	Work
	d.	Kinetic energy
	e.	Work done by a variable force
	f.	The work-energy theorem for a variable force
	g.	The concept of potential energy
	h.	The conservation of mechanical energy
	i.	The potential energy of a spring
	j.	Various forms of energy
	k.	The law of conservation of energy
	l.	Power
	m.	Collisions
7		CIRCULAR MOTION, ROTATIONAL MOTION
	a.	Centre of mass
	b.	Motion of Centre of mass
	c.	Linear momentum of a system of particles
	d.	Vector product of two vectors
	e.	Angular velocity and its relation with linear velocity
	f.	Torque and angular momentum
	g.	Equilibrium of a rigid body
	h.	Moment of inertia
	i.	Theorems of perpendicular and parallel axis
	j.	Kinematics of rotational motion about a fixed axis
	k.	Dynamics of rotational motion about a fixed axis
	l.	Angular momentum in case of rotation about a fixed axis
	m.	Rolling motion
8		GRAVITATION
	a.	Kepler's laws
	b.	Universal law of gravitation
	c.	The gravitational constant
	d.	Acceleration due to gravity of the earth
	e.	Acceleration due to gravity below and above the surface of earth
	f.	Gravitational potential energy
	g.	Escape speed
	h.	Earth satellite Energy of an orbiting satellite Geostationary and polar satellites
	i.	Weightlessness
9		PRESSURE AND ARCHEMEDES PRINCIPLE
	a.	Fluids
	b.	Pressure in a Fluid's Pascal's Law
	c.	Atmospheric Pressure and Barometer
	d.	Archimedes' Principle
	e.	Buoyant Force in Acceleration Fluid's
10		BERNOULLI'S THEOREM AND APPLICATION
	a.	Flow of Fluids
	b.	Steady and Turbulent Flow
	c.	Equation of Continuity

	d.	Bernoulli's Equation
	e.	Applications of Bernoulli's Equation
	f.	Viscosity
	g.	Flow through a Narrow Tube
	h.	Poiseuille's Equation
	i.	Stokes's Law
	j.	Terminal Velocity
	k.	Measuring Coefficient of Viscosity
	l.	By Stokes' Method
	m.	Critical Velocity and Reynolds Number
11		SURFACE TENSION AND ELASTICITY
	a.	Elasticity
	b.	Stress
	c.	Strain
	d.	Hooke's Law and the Moduli of Elasticity
	e.	Relation between Longitudinal Stress and Strain
	f.	Elastic Potential Energy of a Strain Body
	g.	Poisson ratio Surface Tension
	h.	Surface Energy
	i.	Excess Pressure Inside a Drop
	j.	Excess Pressure in a Soap Bubble
	k.	Contact Angle
	l.	Rise of Liquid in a Capillary Tube
12		CALORIMETRY AND THERMOMETRY
	a.	Temperature and heat
	b.	Measurement of temperature
	c.	Ideal-gas equation and absolute temperature
	d.	Specific heat capacity
	e.	Calorimetry
13		TRANSFER OF HEAT AND THERMAL EXPANSION
	a.	Thermal equilibrium
	b.	Heat
	c.	Thermal Expansion
	d.	Conduction
	f.	Convection
	e.	Radiation
	g.	Stefan law
14		KINETIC THEORY
	a.	Molecular nature of matter
	b.	Behaviour of gases
	c.	Kinetics theory of an ideal gas
	d.	Law of equipartition of energy
	e.	Specific heat capacity
	f.	Mean free path
15		THERMODYNAMICS
	a.	Zeroth law of thermodynamics
	b.	Internal energy and work

	c.	First law of thermodynamics
	d.	Thermodynamic
	e.	State variables and equation of state
	f.	Thermodynamic processes
	g.	Heat engines
	h.	Refrigerators and heat pumps
	i.	Second law of thermodynamics Reversible and irreversible processes
	j.	Carnot engine
16		SIMPLE HARMONIC MOTION AND ITS APPLICATION
	a.	Periodic and oscillatory motions
	b.	Simple harmonic motion
	c.	Simple harmonic motion and uniform circular motion
	d.	Velocity and acceleration in simple harmonic motion
	e.	Force law for simple harmonic motion
	f.	Energy in simple harmonic motion
	g.	Some systems executing SHM
	h.	Damped simple harmonic motion
	i.	Forced oscillations and resonance
17		WAVE AND ITS SPEED
	a.	Wave Motion
	b.	Wave Speed
	c.	Velocity of Sound in any elastic medium
	d.	Newton's Formula
	e.	Laplace Correction
	f.	Transverse and Longitudinal Waves.
18		BEATS AND VIBRATION OF ORGAN PIPE
	a.	Interference and The Principle of Superposition
	b.	Interference of Wave Going in same Direction
	c.	Reflection and Transmission of Wave
	d.	Standing Waves
	e.	Standing Wave on a String Fixed at Both Ends (Qualitative Discussion)
	f.	Analytic Treatment of Vibration of a String Fixed at Both Ends
	g.	Vibration of a String Fixed at One End, Sonometer
19		DOPPLER'S EFFECT
20		COULOMB'S LAW, ELECTRIC FIELD AND POTENTIAL
	a.	Electric Charges
	b.	Charging by Induction
	c.	Basic Properties of Electric Charge
	d.	Coulomb's Law
	e.	Force between Multiple Charges
	f.	Electric Field
	g.	Electric Field Lines
	h.	Electric Flux
	i.	Electric Dipole
	j.	Dipole in a Uniform External Field
	k.	Continuous Charge Distribution
	l.	Gauss's Law

	m.	Electrostatics Potential
	n.	Potential due to a Point Charge
	o.	Potential due to an Electric Dipole
	p.	Potential due to a System of Charges
	q.	Equipotential Surfaces
	r.	Potential Energy of a System of Charges
	s.	Potential Energy in an External Field
21		CAPACITANCE, VAN-DE-GRAFF GENERATOR
	a.	Conductors and Insulators
	b.	Electrostatics of Conductors
	c.	Dielectrics and Polarization
	d.	Capacitors and Capacitance
	e.	The Parallel Plate Capacitor
	f.	Effect of Dielectric on Capacitance
	g.	Combination of Capacitors
	h.	Energy Stored in a Capacitor
	i.	Van de Graaff Generator
22		CELL, OHM'S LAW, RESISTIVITY AND CONDUCTIVITY
	a.	Electric Current in Conductors
	b.	Ohm's law
	c.	Drift of Electrons and the Origin of Resistivity
	d.	Limitations of Ohm's Law Resistivity of various Materials
	e.	Temperature Dependence of Resistivity
	f.	Electrical Energy
	g.	Power
	h.	Combination of Resistors – Series and Parallel Cells, emf
	i.	Internal Resistance
	j.	Cells in Series and in Parallel
	k.	Kirchhoff's Laws
	l.	Wheatstone Bridge
	m.	Meter Bridge
	n.	Potentiometer
23		House hold Electricity
	a.	Heating Effect of current
	b.	Power rating of appliances
	c.	House hold Electricity connection
24		MAGNETIC EFFECT OF CURRENT & MAGNETISM
	a.	Magnetic Force
	b.	Motion in a Magnetic Field
	c.	Motion in Combined Electric and Magnetic Fields
	d.	Magnetic Field due to a Current Element
	e.	Biot-Savart Law
	f.	Magnetic Field on the Axis of a Circular Current Loop
	g.	Ampere's Circuital Law
	h.	The Solenoid and the Toroid,
	i.	Force between Two Parallel Currents
	j.	The ampere

	k.	Torque on Current Loop
	l.	Magnetic Dipole
	m.	The moving Coil Galvanometer
	n.	Introduction the Bar Magnet Magnetism and Gauss's Law
	o.	The Earth's Magnetism
	p.	Magnetization and Magnetic Intensity
	q.	Magnetic Properties of Materials
	r.	Permanent Magnets and Electromagnets
25	ELECTRO, MAGNETIC INDUCTION AND ALTERNATING CURRENT	
	a.	The Experiments of Faraday and Henry,
	b.	Magnetic Flux
	c.	Faraday's Law of Induction
	d.	Lenz's Law and Conservation of Energy
	e.	Motional Electromotive Force Energy Consideration: A Quantitative Study
	f.	Eddy Current, Inductance
	g.	AC Generator
	h.	AC Voltage Applied to a Resistor
	i.	Representation of AC Current and Voltage by, Rotating Vectors - Phasors AC Voltage Applied to an Inductor, AC Voltage Applied to a Capacitor, AC Voltage Applied to a Series LCR Circuit, Power in AC Circuit: The Power Factor, LC Oscillations, Transformers.
26	ELECTROMAGNETIC WAVES AND Wave Optics	
	a.	Displacement Current Electromagnetics Waves
	b.	Electromagnetic Spectrum
	c.	Huygens Principle
	d.	Refraction and reflection of plane waves using Huygens Principle
	e.	Coherent and Incoherent Addition of Waves
	f.	Interference of Light Waves and Young's Experiment
	g.	Diffraction
	h.	Polarization
27	REFLECTION AND REFRACTION OF LIGHT	
	a.	Reflection of Light by Spherical Mirrors
	b.	Refraction
	c.	Total Internal Reflection
28	PRISM, LENS AND OPTICAL INSTRUMENTS	
	a.	Refraction at Spherical Surface and by Lenses
	b.	Refraction through a Prism
	c.	Dispersion by a Prism
	d.	Some Natural Phenomena due to Sunlight
	e.	Optical Instruments
29	ATOM, NUCLEUS AND RADIOACTIVITY	
	a.	Alpha-particle Scattering and Rutherford's Nuclear Model of Atom
	b.	Atomic Spectra
	c.	Bohr Model of the Hydrogen Atom
	d.	The Line Spectra of the Hydrogen Atom
	e.	DE Broglie's Explanation of Bohr's Second Postulate of Quantization

	f.	Nuclei Atomic Masses and Composition of Nucleus
	g.	Size of the Nucleus
	h.	Nuclear Force
	i.	Radioactivity
	j.	Nuclear Energy
30	SEMI CONDUCTOR DEVICE	
	a.	Classification of Metals
	b.	Conductors and Semiconductors
	c.	Intrinsic Semiconductor
	d.	Extrinsic Semiconductor
	e.	p-n Junction
	f.	Semiconductor diode
	g.	Application of Junction Diode as a Rectifier
	h.	Special Purpose p-n Junction Diodes
	i.	Junction Transistor
	j.	Digital Electronics and Logic Gates
	k.	Integrated Circuits
31	COMMUNICATION	
	a.	Communication System
	b.	Type of Modulation
	c.	Type of wave propagation

General Science

CHEMISTRY

1. Some Basic concept of chemistry, mole concept. Nature of metal, non metal. Metalized salt.
2. **Atomic structure**
 - Classical** - Discovery of e^- , p^+ , n^0
Discovery of nucleus
Bohr's, Bury electronic.
Atomic model
Rutherford, Bohr's, Sommerfeld
 - Modern** - De-Broglie Principle
Heisenberg Principle
Quantum Number.
Pauli's, Hund's, Aufbau's
3. **Radio Activity** - α, β, γ , rays
 - Soddy Fajans Russell (Group Displacement Law)
 - Half life disintegration constant
4. **Acid Base salt** - Type of acid, base and salt
5. **Periodic Table** -
 1. Classification
 2. Periodic properties
6. **Chemical Bonding** - Valency & type of Bonding
Lewis dot structure
7. **Oxidation and Reduction** -
 1. Oxidation Number.
 2. Ion Electron Method
 3. Electrode Potential
8. **Carbon & It's comp** -
 1. Allotrope
 2. Hydrocarbons
 3. Isomerism
9. **Glass & Cement** - Method & Properties
10. **Chemistry everyday life** - Medicine & Detergents

Biology

1. **Structural organization of cell.**

CELL ORGANELS

 - Discovery of Cell
 - Cell Theory
 - Difference between prokaryotic cell and Eucaryotic cell
 - Endoplasmic Reticulum (ER)
 - Golgi apparatus
 - Lysosome etc.
 - Nucleus – chromosome
2. **Balance Diet** :
Carbohydrate, fat protein, minerals vitamin water.
3. **Vascular System** : **Blood, Blood corpusel.**
Plasma : Difference between Lymph and Blood.
Blood groupings : Antibodies, Human Heart and its function
4. **Endocrine System.**
All Glands(Pituitary Gland, Oxytocin. Thyroid Gland, Parathyroid Glands, Thymus Gland , Pancreas, Adrenal Glands, Gonods, Testes, Ovary
5. **Reproductive Systems**

- Types of reproduction
- Secondary sex organ
- Menstrual cycle.
- Estrous cycle.
- Amniocentesis

6. **Nervous System**

- C.N.S.
- P.N.S. → Cranial Nerve → Spinal Nerve
- Sensory Organ
- Ear

7. **Excretory System**

- Nitrogenous waste Products.
- Excretory System of mammals

8. **Respiratory System**

- Types of Respiration
- Respiratory organ
- Structure of Lungs

9. **Skeleton System.**

- Exoskeleton
- Endoskeleton (Human)
- Joints
- Muscular System

10. **Human Disease.**

- | | |
|---------------------|---------------------------|
| Bacterial Diseases. | Protozoan Disease. |
| Viral Disease. | <u>Helminthic Disease</u> |
| Fungal Disease | |

DEFENCE(CURRENT AFFAIRS)SYLLABUS

1.	Introduction and Terminologies
2.	History of Indian Military
3.	Indian Army <ul style="list-style-type: none"> ➤ Organizational Setup example Structure, Regiments etc. ➤ Imported and Indigenous weapons and their mechanism.
4.	Indian Navy <ul style="list-style-type: none"> ➤ Organizational Setup example Structure, Fleets etc. ➤ Imported and Indigenous Ship, Submarines etc. and their mechanism.
5.	Indian Air Force <ul style="list-style-type: none"> ➤ Organizational Setup example Structure, Wings etc. ➤ Imported and Indigenous Air Crafts etc. and their mechanism.
6.	Paramilitary Forces and Indian Coast Guard.
7.	Central Armed Police Force
8.	Exercises and Operations <ul style="list-style-type: none"> ➤ Domestic ➤ International
9.	Commands and Training Centers
10.	Missiles and MTCR
11.	Miscellaneous <ul style="list-style-type: none"> ➤ Awards ➤ Defence Ministry and Home Ministry. ➤ Coordinated Institutions like DRDO, BRO etc. ➤ AFSPA
	<ul style="list-style-type: none"> ➤ Questions