

# AMRITA VISHWA VIDYAPEETHAM

## AMRITA ENTRANCE EXAMINATION – ENGINEERING 2010

( For admission to B.Tech. Programmes in the three campuses  
Amritapuri, Bengaluru & Coimbatore )

**Admission to B.Tech programmes in the three campuses will be subject to eligibility and based on rank in the Amrita Entrance Examination – Engineering 2010.**

Date of Entrance Examination	: 02nd May 2010 ( Sunday )
Issue of Application Form starts	: 21.12.2009
Last date for applying online	: 25.03.2010
Last date of Sale of Application Form	: 27.03.2010
Last date for receipt of filled in Application Form	: 30.03.2010
Cost of Application packet	: Rs.850/-

### B.Tech Programmes offered:

B.TECH Programmes	Amritapuri	Bangalore	Coimbatore
Aerospace Engineering			v
Chemical Engineering			v
Civil Engineering			v
Computer Science & Engineering	v	v	v
Electrical & Electronics Engineering	v	v	v
Electronics & Communication Engineering	v	v	v
Electronics & Instrumentation Engineering		v	v
Mechanical Engineering	v	v	v

Applications can be had from select branches of AXIS Bank , Dhanalakshmi Bank & State Bank of Hyderabad. ( see bank list )

For admission enquiry contact : 0422 – 2685169 / 170 ( 9 AM – 5 PM ) on all working days. ( from 01.12.2009 )

Advertisement will be released during second / third week of December 2009 in the leading news papers across the country. ( in English.)

**AXIS BANK & DHANALAKSHMI BANK BRANCHES**

( WHERE APPLICATION FORMS ARE AVAILABLE )

S.No.	State	Bank Location	AXIS	DLB
01	ANDHRA PRADESH	Anantapur	v	
02		Chitoor	v	
03		Cuddapah ( Rajampet )		v
04		Eluru	v	v
05		Guntur	v	v
06		Gudivada ( Eluru Road )	v	
07		Hyderabad ( Abids Road )		v
08		Hyderabad ( Banjara Hills )	v	v
09		Hyderabad ( Begumpet Road )	v	
10		Hyderabad ( Dilsukh Nagar )	v	
11		Hyderabad ( Himayat Nagar )	v	
12		Hyderabad ( Jubilee Hills )	v	
13		Hyderabad ( Kompally )	v	
14		Hyderabad ( Kukatpally )	v	v
15		Hyderabad ( Medhipatnam Ring Road )	v	
16		Hyderabad ( S.R. Nagar )	v	v
17		Kakinada	v	v
18		Karimnagar	v	
19		Khammam	v	v
20		Kurnool	v	
21		Machilipatnam	v	
22		Narasaraopet	v	
23		Nellore	v	v
24		Nizamabad	v	v
25		Ongole	v	
26		Rajamundry	v	
27		Secunderabad	v	
28		Srikakulam	v	
29		Tirupati		v
30		Vijayawada	v	v
31		Vishakhapatnam ( VIP Road )		v
32		Vishakhapatnam ( Dwaraka Nagar )	v	
33		Vizianagaram	v	
34		Warangal	v	

01	ASSAM	Guwahati	v	
----	-------	----------	---	--

01	BIHAR	Bhagalpur	v	
02		Gaya	v	
03		Patna	v	

01	CHATTISGARH	Bhilai	v	
02		Bilaspur	v	
03		Raipur	v	

S.No.	State	Bank Location	AXIS	DLB
01	CHANDIGARH	Chandigarh	v	

01	DELHI	Chandni Chowk	v	
02		Connaught Place		v
03		Dwarka	v	
04		Greater Kailash	v	
05		Karol Bagh	v	v
06		Lajpat Nagar	v	v
07		Nehru Place		v
08		Punjabi Bagh	v	
09		Rajouri Garden	v	
10		Saket	v	
11		Vasant Vihar	v	

01	GOA	Margao	v	
02		Panaji	v	
03		Vasco	v	

01	GUJARAT	Ahmedabad	v	v
02		Anand	v	
03		Gandhi Nagar	v	
04		Rajkot	v	
05		Surat	v	v
06		Vadodara	v	v

01	HARYANA	Bhiwani	v	
02		Faridabad	v	v
03		Gurgaon	v	v
04		Rohtak	v	

01	HIMACHAL PRADESH	Shimla	v	
----	------------------	--------	---	--

01	JHARKAND	Dhanbad	v	
02		Jamshedpur	v	
03		Ranchi	v	

01	KARNATAKA	Bengaluru ( Banashankari )	v	
02		Bengaluru ( Dickenson Road )		v
03		Bengaluru ( Electronic City )	v	
04		Bengaluru ( Indira Nagar )	v	
05		Bengaluru ( Jaya Nagar )		v
06		Bengaluru ( J.C.Road )		v
07		Bengaluru ( J.P.Nagar )	v	
08		Bengaluru ( Koramangala )	v	v
09		Bengaluru ( Majestic )	v	
10		Bengaluru ( Malleswaram )	v	
11		Bengaluru ( M.G.Road )	v	v

S.No.	State	Bank Location	AXIS	DLB
12	KARNATAKA	Bengaluru ( Peenya )	v	v
13		Bengaluru ( Rajaji Nagar )	v	
14		Bengaluru ( R.T.Nagar )	v	
15		Bengaluru ( Sanjay Nagar )	v	
16		Bengaluru ( Vijaya Nagar )	v	
17		Belgaum	v	
18		Bellary	v	
19		Bijapur	v	
20		Davangere	v	
21		Dharwad	v	
22		Gulbarga	v	
23		Hassan	v	
24		Hubli	v	
25		Karwar	v	
26		Mangalore	v	v
27		Mysore ( Kuvenpu Nagar )	v	
28		Raichur	v	
29		Shimoga	v	
30		Tumkur ( Batawadi )		v
31		Tumkur ( B.H.Road )	v	
32		Udupi	v	

01	KERALA	Adoor		v
02		Alappuzha	v	v
03		Aluva	v	
04		Changanacherry		v
05		Chenganoor		v
06		Ernakulam ( Kaloor )		v
07		Ernakulam ( Shanmugam Road )		v
08		Guruvayoor		v
09		Haripad		v
10		Kalpetta		v
11		Kollam	v	v
12		Kannur	v	v
13		Kasargod	v	v
14		Kochi ( Willingdon Island )	v	
15		Kottayam	v	v
16		Kozhikode	v	v
17		Palai	v	v
18		Palakkad City	v	v
19		Palarivattom	v	
20		Pathanamthitta	v	v
21		Perinthalmanna		v
22		Malappuram	v	v
23		Thalassery		v
24		Thiruvalla	v	v
25		Thodupuzha	v	v
26		Thripunithura		v
27		Thrissur	v	v
28		Trivandrum Fort		v
29		Trivandrum ( Karamana )	v	
30		Trivandrum ( Pattam, p.o)	v	
31		Vazhuthacaud		v

S.No.	State	Bank Location	AXIS	DLB
01	MADHYA PRADESH	Bhopal	v	
02		Gwalior	v	
03		Jabalpur	v	
04		Indore	v	
05		Sehore	v	

01	MAHARASHTRA	Amravati	v	
02		Kolhapur	v	
03		Matunga		v
04		Mumbai ( Chembur )	v	v
05		Mumbai ( Dadar )	v	
06		Mumbai ( Fort )	v	v
07		Mumbai ( Sion )		v
08		Mumbai ( Thane )	v	
09		Mumbai ( Vashi )	v	v
10		Nagpur	v	
11		Nasik	v	
12		Pune	v	

01	MANIPUR	Imphal	v	
----	---------	--------	---	--

01	MIZORAM	Aizwal	v	
----	---------	--------	---	--

01	NAGALAND	Kohima	v	
----	----------	--------	---	--

01	ORISSA	Bhubaneshwar	v	
02		Cuttack	v	

01	PONDICHERRY	Pondicherry	v	
----	-------------	-------------	---	--

01	PUNJAB	Amristar	v	
02		Jalandar	v	
03		Ludhiana	v	
04		Mohali	v	
05		Patiala	v	

01	RAJASTHAN	Ajmer	v	
02		Bikaner	v	
03		Jaipur	v	v
04		Jodhpur	v	
05		Kota	v	
06		Udaipur	v	

01	TAMILNADU	Arani	v	
02		Attur	v	
03		Chennai ( Adayar )	v	
04		Chennai ( Anna Nagar )	v	v
05		Chennai ( Ashok Nagar )	v	v
06		Chennai ( Anna Salai )	v	
07		Chennai ( George Town )	v	v
08		Chennai ( Kilpauk )	v	
09		Chennai ( Mandaveli )		v
10		Chennai ( Mylapore )	v	
11		Chennai ( Mount Road )		v
12		Chennai ( Nanganallur )	v	
13		Chennai ( Purasawalkam )	v	
14		Chennai ( Tambaram )	v	

S.No.	State	Bank Location	AXIS	DLB
15	TAMILNADU	Chennai ( Tiruvanmayur )	v	
16		Chennai ( T.Nagar )	v	v
17		Coimbatore ( Avanashi Road )	v	v
18		Coimbatore ( Cross Cut Road )		v
19		Coimbatore ( Ettimadai )		v
20		Coimbatore ( R.S.Puram )	v	
21		Coimbatore ( Trichy Road )	v	
22		Cuddalore	v	
23		Cumbum	v	
24		Dharmapuri	v	
25		Dindugul	v	
26		Erode ( Netaji Road )		v
27		Erode ( Perunthurai Road )	v	
28		Erode ( Veerapanchatram )		v
29		Hosur	v	
30		Ilanji	v	
31		Kancheepuram	v	v
32		Karaikudi	v	
33		Karur	v	v
34		Kumbakonam	v	
35		Madurai	v	v
36		Mayiladuthurai	v	
37		Nagercoil	v	v
38		Namakkal		v
39		Ooty	v	
40		Perambalur	v	
41		Pollachi	v	v
42		Pudukottai	v	
43		Rajapalayam	v	
44		Rasipuram	v	
45		Salem	v	v
46		Salem ( Omalur )	v	
47		Sathyamangalam	v	
48		Sivakasi	v	
49		Thanjavur	v	
50		Theni	v	
51		Thiruvallur	v	
52		Tiruchengode	v	
53		Tirunelveli	v	
54		Tirupur	v	v
55		Tiruvannamalai	v	
56		Trichy	v	v
57		Tuticorin	v	
58		Udumalpet		v
59		Vellore	v	v
60		Villupuram	v	

01	UTTARPRADESH	Agra	v	
02		Allahabad	v	
03		Ghaziabad	v	v
04		Kanpur	v	
05		Lucknow	v	v
06		Noida	v	
07		Varanasi	v	

S.No.	State	Bank Location	AXIS	DLB
01	UTTRANCHAL	Dehradun	v	
02		Haridwar	v	

01	WEST BENGAL	Asansol	v	
02		Darjeeling	v	
03		Durgapur	v	
04		Howrah	v	v
05		Kolkatta	v	v

**State Bank of Hyderabad list will be updated soon.**

**CITIES PROPOSED FOR THE CONDUCT OF EXAMINATION WITH CODE NUMBER**

S.No	State	No	City / Town	City Code	No	City / Town	City Code
1	Tamilnadu	1	Chennai	101	11	Ooty	111
		2	Coimbatore	102	12	Pudukottai	112
		3	Cuddalore	103	13	Salem	113
		4	Dindigul	104	14	Thanjavur	114
		5	Erode	105	15	Tirunelveli	115
		6	Hosur	106	16	Tirupur	116
		7	Karur	107	17	Trichy	117
		8	Madurai	108	18	Tuticorin	118
		9	Nagercoil	109	19	Vellore	119
		10	Namakkal	110			

2	Kerala	1	Alappuzha	201	9	Kozhikode	209
		2	Amritapuri	202	10	Malappuram	210
		3	Ernakulam	203	11	Palakkad	211
		4	Kalpetta	204	12	Pathanamthitta	212
		5	Kannur	205	13	Thiruvananthapuram	213
		6	Kasaragod	206	14	Thrissur	214
		7	Kollam	207	15	Thodhupuzha	215
		8	Kottayam	208			

3	Karnataka	1	Belgaum	301	7	Karwar	307
		2	Bengaluru	302	8	Mangalore	308
		3	Bijapur	303	9	Mysore	309
		4	Davangere	304	10	Raichur	310
		5	Gulbarga	305	11	Shimoga	311
		6	Hubli	306	12	Udupi	312

4	Andhra Pradesh	1	Anantapur	401	5	Tirupati	405
		2	Hyderabad	402	6	Vijayawada	406
		3	Kakinada	403	7	Vishakhapatnam	407
		4	Nellore	404			

**CITIES PROPOSED FOR THE CONDUCT OF EXAMINATION WITH CODE NUMBER**

<b>S.No</b>	<b>State</b>	<b>No</b>	<b>City / Town</b>	<b>City Code</b>
5	Assam	1	Guwahati	411
6	Bihar	1	Patna	416
7	Chandigarh	1	Chandigarh	421
8	Chhattisgarh	1	Raipur	426
9	Delhi	1	New Delhi	431
10	Goa	1	Panaji	436
11	Gujarat	1	Ahmedabad	441
		2	Vadodara	442
12	Jharkand	1	Jamshedpur	446
		2	Ranchi	447
13	Madhya Pradesh	1	Bhopal	451
		2	Indore	452
14	Maharashtra	1	Mumbai	456
		2	Nagpur	457
		3	Pune	458
15	Orissa	1	Bhubaneshwar	461
16	Pondicherry	1	Pondicherry	466
17	Rajasthan	1	Jaipur	471
		2	Kota	472
18	Uttaranchal	1	Dehra Dun	476
19	Uttarpradesh	1	Lucknow	481
		2	Varanasi	482
20	West Bengal	1	Durgapur	486
		2	Kolkatta	487

## SYLLABUS FOR ENTRANCE EXAMINATION

### MATHEMATICS

#### a. COMPLEX NUMBERS

Algebra of complex numbers, modulus and argument (or amplitude) of a complex number, square root of a complex number. cube roots of unity, triangle inequality.

#### b. MATRICES AND DETERMINANTS

Determinants and matrices of order two and three- properties of determinants, evaluation of determinants, addition and multiplication of matrices, adjoint and inverse of a matrix. Solution of simultaneous linear equations using determinants.

#### c. QUADRATIC EQUATIONS

Quadratic equations and their solutions, relation between roots and coefficients, nature of roots, formation of quadratic equations with given roots.

#### d. PERMUTATIONS AND COMBINATIONS

Fundamental principle of counting; permutation as an arrangement and combination as a selection, meaning of  $P(n, r)$  and  $C(n, r)$ , simple applications.

#### e. SEQUENCES AND SERIES

Arithmetic, Geometric and Harmonic progressions. Relation between A.M., G.M. and H.M.. Special series:  $\sum n$ ,  $\sum n^2$ ,  $\sum n^3$ , Arithmetic-Geometric series, exponential and logarithmic series.

#### f. VECTOR ALGEBRA

Vectors and scalars, addition of two vectors, components of a vector in two and three dimensional space, scalar and vector products, scalar and vector triple products. Application of vectors to plane geometry.

#### g. TRIGONOMETRY

Trigonometrical identities and equations. Inverse trigonometric functions and their properties. Properties of triangles including centroid, incentre, circumcentre and orthocentre. Solution of triangles. Heights and distances.

#### h. MEASURES OF CENTRAL TENDENCY AND DISPERSION

Calculation of mean, median and mode, standard deviation, variance and mean deviation for grouped and ungrouped data.

#### i. PROBABILITY

Probability of an event, addition and multiplication theorems of probability and their applications. Conditional probability; Bayes' theorem. Probability distribution of a random variate- Binomial and Poisson distributions and their properties.

#### j. DIFFERENTIAL CALCULUS

Polynomial, rational, trigonometric, logarithmic and exponential functions. Graphs of simple functions. Limits, continuity and differentiation of the sum, difference, product and quotient of two functions. Differentiation of trigonometric, inverse trigonometric, logarithmic, exponential, composite and implicit functions; derivatives of order

up to two. Applications of derivatives-maxima and minima of functions of one variable, tangents and normals, Rolle's and Lagrange's mean value theorems.

#### **k. INTEGRAL CALCULUS**

Integral as an anti derivative, fundamental integrals involving algebraic, trigonometric, exponential and logarithmic functions. Integration by substitution, by parts and by partial fractions. Integration using trigonometric identities. Integral as a limit of sum. Properties of definite integrals. Evaluation of definite integral, determining areas of the regions bounded by simple curves.

#### **l. DIFFERENTIAL EQUATIONS**

Formation of differential equations. Solutions of first order differential equations- the method of separation of variables, homogeneous and linear differential equations.

#### **m. TWO DIMENSIONAL GEOMETRY**

Review of cartesian system of rectangular co-ordinates in a plane, distance formula, area of a triangle, condition for the collinearity of three points, slope of a line, parallel and perpendicular lines, intercepts of a line on the coordinate axes.

#### **n. THE STRAIGHT LINE AND PAIR OF STRAIGHT LINES**

Various forms of equations of a line, intersection of lines, angles between two lines, conditions for concurrence of three lines, distance of a point from a line. Equations of internal and external bisectors of angles between two lines, equation of a family of lines passing through the point of intersection of two lines, point of intersections and angles between two lines. Pair of straight lines- condition for the general second degree equation to represent a pair of lines, point of intersection and angle between pair of lines through the origin, combined equation of the bisectors of the angles between a pair of lines,

#### **o. CIRCLES AND FAMILY OF CIRCLES**

Equation of a circle- standard form, general form, parametric form, equation of a circle when the end points of a diameter are given. Radius and centre of a circle, points of intersection of a line and a circle. Condition for a line to be tangent, equation of a family of circles through the intersection of two circles, condition for two intersecting circles to be orthogonal.

#### **p. CONIC SECTIONS**

Sections of cones, equations of conic sections (parabola, ellipse and hyperbola) in standard forms, conditions for a line to be a tangent and point(s) of tangency.

## PHYSICS

### **a. UNITS AND DIMENSIONS**

Units for measurement, system of units, SI, fundamental and derived units, dimensions and their applications

### **b. MECHANICS**

Motion in straight line, uniform and non-uniform motion, uniformly accelerated motion and its applications

Scalars and Vectors, and their properties; resolution of vectors, scalar and vector products; uniform circular motion and its applications, projectile motion, Newton's Laws of motion; conservation of linear momentum and its applications, laws of friction, Concept of work, energy and power; energy-kinetic and potential; conservation of energy; different forms of energy. Elastic collisions in one and two dimensions.

Center of mass of a many particle system; center of mass of a rigid body, rotational motion and torque. Angular momentum and its conservation. Moments of inertia, parallel and perpendicular axes theorem, moment of inertia for a thin rod, ring, disc and sphere.

Gravitation: Acceleration due to gravity and its properties. One and two dimensional motion under gravity. Universal law of gravitation, planetary motion, Kepler's laws, artificial satellite-geostationary satellite, gravitational potential energy near the surface of earth, gravitational potential and escape velocity.

### **c. SOLIDS AND FLUIDS**

Solids: Elastic properties, Hooke's law, Young's modulus, bulk modulus, modulus of rigidity. Liquids: Cohesion and adhesion; surface energy and surface tension; flow of fluids, Bernoulli's theorem and its applications; viscosity, Stoke's Law, terminal velocity.

#### **i) OSCILLATIONS AND WAVES**

Periodic motion, simple harmonic motion and its equation, oscillations of a spring and simple pendulum. Wave motion, properties of waves, longitudinal and transverse waves, superposition of waves, Progressive and standing waves. Free and forced oscillations, resonance, vibration of strings and air columns, beats, Doppler effect

#### **ii) HEAT AND THERMODYNAMICS**

Thermal expansion of solids, liquids and gases and their specific heats, relationship between  $C_p$  and  $C_v$  for gases, first and second laws of thermodynamics, Carnot cycle, efficiency of heat engines. Transference of heat; thermal conductivity; black body radiations, Kirchoff's law, Wein's Law, Stefan's law of radiation and Newton's law of cooling.

#### **iii) ELECTROSTATICS, CURRENT ELECTRICITY AND MAGNETOSTATICS**

Coulomb's law, dielectric constant, electric field, lines of force, field due to dipole, electric flux, Gauss's theorem and its applications; electric potential, potential due to a point charge; conductors and insulators, distribution of charge on conductors; capacitance, parallel plate capacitor, combination of capacitors, energy stored in a capacitor

Electric current : Cells-primary and secondary, grouping of cells; resistance and specific resistivity and its temperature dependence. Ohm's law, Kirchoff's Law. Series and parallel circuits; Wheatstone's Bridge and potentiometer with their applications.

Heating effects of current, electric power, concept of thermoelectricity-Seebeck effect and thermocouple; chemical effect of current- Faraday's laws of electrolysis.

Magnetic effects: Oersted's experiment, Biot Savart's law, magnetic field due to straight wire, circular loop and solenoid, force on a moving charge in a uniform magnetic field(Lorentz force), forces and torques on a current carrying conductor in a magnetic field, force between current carrying wires, moving coil galvanometer and conversion to ammeter and voltmeter.

Magnetostatics: Bar magnet, magnetic field, lines of force, torque on a bar magnet in a magnetic field, earth's magnetic field; para, dia and ferro magnetism, magnetic induction, magnetic susceptibility

#### **d. ELECTROMAGNETIC INDUCTION AND ELECTROMAGNETIC WAVES**

Induced e.m.f., Faraday's law, Lenz's law, self and mutual inductance; alternating currents, impedance and reactance, power in ac; circuits with L C and R series combination, resonant circuits, transformer and AC generator. Electromagnetic waves and their characteristics; electromagnetic spectrum from gamma to radio waves.

#### **e. RAY AND WAVE OPTICS**

Reflection and refraction of light at plane and curved surfaces, total internal reflection; optical fiber; deviation and dispersion of light by a prism; lens formula, magnification and resolving power; microscope and telescope Wave nature of light, interference, Young's double experiment; thin films, Newton's rings. Diffraction: diffraction due to a single slit; diffraction grating, polarization and applications.

#### **f. MODERN PHYSICS**

Charge on an electron, photoelectric effect, Alpha particle scattering experiment, atomic masses, size of the nucleus; radioactivity, alpha, beta and gamma particles/rays. Radioactive decay law, half life and mean life of radio active nuclei; Nuclear binding energy, mass energy relationship, nuclear fission and nuclear fusion. Energy bands in solids, conductors, insulators and semiconductors, pn junction, diode, diode as a rectifier, transistor action, transistor as an amplifier.

## CHEMISTRY

### a. BASIC CONCEPTS

Atomic and molecular masses; Chemical Equation and stoichiometry.

### b. STATES OF MATTER

**Gaseous State:** Gas laws, Avogadro's hypothesis and gas equations; Kinetic Theory of Gases; Liquefaction, Critical Phenomena; **Liquid State and Solid state.**

### c. ATOMIC STRUCTURE

Bohr's Model; de Broglie equation; Quantum Mechanical Model; Aufbau's Principle, Pauli's Exclusion Principles, Hund's Rule, Electronic Configuration; Bonding: Lewis structure, SEPR theory, hybridization, ionic, covalent and coordinate covalent bonds, bonding in solid state, MO theory, bond order and magnetic properties of H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, F<sub>2</sub>.

### d. SOLUTIONS

Types, Units of concentration, Raoult's Law, colligative properties, abnormal molecular weights.

### e. CHEMICAL ENERGETICS AND THERMODYNAMICS

Internal Energy, Enthalpy, Hess's Law, First & Second Laws of thermodynamics & applications; entropy, free energy; spontaneity of a chemical reaction.

### f. CHEMICAL KINETICS & CHEMICAL EQUILIBRIUM

Rate and orders of a reaction; activation energy; catalyst; Rate law; physical & chemical equilibria; Le Chatelier's principle; acid base equilibrium; acids and bases; pH; buffers; solubility product.

### g. REDOX REACTIONS, ELECTROCHEMISTRY & SURFACE CHEMISTRY

Electron Transfer Concepts of Oxidation and reduction; Electrochemical cells; emf; Nernst Equation; Molar conductivity; Kohlrausch's Law; Fuel Cells; Corrosion. Physical & Chemical adsorption isotherms; Colloids: Preparation & properties; Homogenous and Heterogenous Catalysis; Enzymes.

### h. PERIODIC PROPERTIES, CHEMICAL FAMILIES, CHEMISTRY OF NON METALS & METALS

Modern Periodic Law; Ionization Energy, Electron Affinity, Atomic Radii, Valency, Trends in Groups and periods. Chemistry of s and p block elements; Alkali metals, Alkaline Earth metals, Boron, Carbon, Nitrogen, Oxygen Halogen and Noble gases families; Hydrogen: Position, Ortho para, Isotopes, hybrids; Oxygen, Water, Hydrogen peroxide, Hard & Soft water; Ammonia, Nitrogen oxides, Nitric acid; Boron, Boric Acid, Borax; Carbides, Allotropy of Carbon; Sodium, Magnesium, Copper, Silver, Zinc, Transition Metals, and Lanthanides: Extraction, properties and uses.

### i. CO-ORDINATION CHEMISTRY

Nomenclature, isomerism and bonding in coordination compounds; Werner's Theory.

**j. NUCLEAR CHEMISTRY**

Radioactivity, Nuclear reactions, Radiocarbon dating, Radioactive series, Artificial Transmutation.

**k. ORGANIC CHEMISTRY FUNDAMENTALS**

Purification; detection and estimation of elements; Empirical and Molecular formulae, Classification, Functional Groups, IUPAC Nomenclature, Homolytic and Heterolytic Bond Fissions, Structural and Stereoisomerisms, Free radicals, Carbocations and carbanions; Substitution, addition, elimination and rearrangement reactions.

**l. HYDROCARBONS & HALO ALKANES & HALO ALKENES**

Alkanes, Alkenes and Alkynes, Halo alkanes & Halo alkenes: Preparation, properties and uses; Aromatic Hydrocarbons: Benzene, Structure, Resonance, Substitution in Benzene. Petroleum: Cracking, reforming, Octane number.

**m. ORGANIC COMPOUNDS CONTAINING OXYGEN, NITROGEN**

Preparation properties and uses of Aromatic and aliphatic alcohols, Polyhydric alcohols, ethers, aldehydes, ketones, carboxylic acids and their derivatives; Cyanides, isocyanides, nitro compounds and amines.

**n. SYNTHETIC AND NATURAL POLYMERS & BIOMOLECULES**

Natural and Synthetic polymers; Teflon, PVC, Polystyrene, Nylon 66 Terylene, and Bakelite; carbohydrates, amino acids and peptides, Nucleic Acids, lipids etc.

**o. CHEMISTRY IN ACTION & ENVIRONMENTAL CHEMISTRY**

Dyes, Medicines (Antipyretics, Analgesics and Antibiotics), Rocket Propellants; Acid Rain, Ozone Hole, Green House Effect, Global Warming Industrial Pollution.

**For Model Question Paper ( Download )**

## *Dates to Remember*

- Issue of Application forms starts - 21/12/2009 ( Monday )
- Last date for applying online - 25/03/2010 ( Thursday )
- Last date of issue of Application forms - 27/03/2010 ( Saturday )
- Last date for receiving completed applications - 30/03/2010 ( Tuesday )

*Date of Entrance Examination - 02/05/2010 ( Sunday )*