

2012



**GHANI KHAN CHOUDHURY INSTITUTE OF
ENGINEERING & TECHNOLOGY
MALDA**



GKCIET

Ghani Khan Choudhury Institute of Engineering & Technology

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THE INSTITUTE

1.1 INTRODUCTION

Ghani Khan Choudhury Institute of Engineering & Technology (GKCIET), Malda, West Bengal was established in 2010 by Ministry of Human Resource Development, Govt. of India in the memory of Sri Ghani Khan Choudhury who had contributed immensely to societal development of the region. The Institute is located at Malda, West Bengal with the bordering districts of Bihar, Jharkhand and North Eastern states. Ghani Khan Choudhury Institute of Engineering & Technology (GKCIET), Malda was established, with the objective to create a multi-layered inter disciplinary and inter-sectoral efficient professional technical manpower to act as an international podium for the development and transfer of technical competence in academics. It is committed to provide best possible technical education at grass route level and to cater to the specific needs of women, school dropouts and other disadvantaged sections of society by organizing a large number of short/long term skills orientation programmes for economic development and inclusive growth of society. It was formulated that the institute, besides catering to the needs of formal education would undertake the non formal education to prepare the skilled and qualified manpower for self employment. Further, the institute would take up a strategic research and development activities which along with entrepreneurship will help in extending the efforts of the institute in imparting education to the unemployed and working population by updating and upgrading their technical skills. The institute was thought to cater to then existing 3-tier system to modern industry, which incorporates workers, technicians and engineers. The institute is temporarily located at Power Grid Corporation's training institute, Malda and the permanent location will be developed shortly in a sprawling area of 101 acres of land, at a distance of 7 km from Malda central railway station and 0.7 km from 34 No National Highway. It is surrounded by lush green land and mango trees with beautiful landscapes.

1.2 OBJECTIVES

1.2.1. EDUCATION AND TRAINING

- To offer flexible, modular, credit based multi-point entry/exit programmes in Engineering and Technology.
- To promote self employment in all programme by introducing an element of entrepreneurship, providing guidance and counseling services to help students to take up self-employment ventures.
- To offer non -formal programme in different areas of technology to strengthen the scope of institutional programme.
- To provide technical education facilities for women, school dropouts and other disadvantaged sections of society through specially designed courses.
- To offer continuing education programme for working personnel from industries at different levels to meet the requirements of small, medium and large industries.
- To offer bridge courses for lateral entry in all programme and for moving from one level of course to another level.

1.2.2. RESEARCH & DEVELOPMENT

- To conduct exploratory research to assess manpower requirement leading to integrated educational planning, curriculum development & instructional material development in the identified areas of Science & Technology.
- To conduct research in the inter-disciplinary areas aimed at solving the problems of industry and community.

1.3 EXTENSION SERVICES

To offer services to:

- Industries in the neighborhood and in the region
- Working personnel
- Passed out students
- I.T.I.'s and Polytechnics
- Research and other institutes of higher learning

1.4 STATUS

- The Institute is an autonomous body and fully funded by the Ministry of Human Resource and Development (MHRD), Government of India.

1.5 GOAL

1.5.1 Short Term Goal

- Dissemination of technical knowledge and skill, inculcate entrepreneurship trait among rural youths using both formal as well as non-formal mode so that they could contribute in the sustainable development of the region in particular and the country as whole.

1.5.2 Long Term Goal

- Institute is to become fountain-head in providing technological excellence in academics through formal/non-formal Technical Education, Entrepreneurship & Research to meet the changing global needs of the society by transforming itself into technical University.

1.6 ACADEMIC DISCIPLINES (IN 2012-2013 SESSION)

1. Food Processing Engineering & Technology
2. Electrical Engineering
3. Mechanical Engineering

1.7 LOCATION

The institute is temporarily located at Power Grid Corporation's Training Institute, Malda and the permanent location will be developed shortly in a sprawling area of 101 acres of land, at a distance of 7 km from Malda central railway station and 0.7 km from 34 No National Highway. It is surrounded by lush green land and mango trees with beautiful landscapes.

2. PROGRAMME STRUCTURE

The Institute offers modular pattern of education in emerging areas of Engineering and Technology. Following two types of Programmes are offered by the institute:

(a) Certificate (b) Diploma

2.1 CERTIFICATE PROGRAMME:

The objective of the Certificate programme is to produce technically skilled manpower in appropriate areas. The meritorious students who wish to study further may join the higher programmes of GKCIET. Certificate programme (2 years) is vertically integrated to Diploma (2 years) and later Diploma to the Degree (3 years) programme. Vertical promotion to higher module is based on entrance test.

2.1.1 ENTRY QUALIFICATION:

The minimum qualification for admission to the Certificate programme is Matric pass (Pass in English, Mathematics and Science is compulsory) from a State Secondary Education Board/CBSE/ICSE/National Open School or an equivalent examination conducted by an Institution or School recognized by and affiliated to CBSE, New Delhi.

2.1.2 DURATION:

The duration of the Certificate programme is 2 years.

2.1.3 DISCIPLINES:

Admission is available in the following Certificate disciplines:

Certificate Programme Offered (In session 2012-2013):

Sl. No	Name of Certificate Programme	Academic programme offering Department	Intake	Qualification	Duration
1	Food Processing and Preservation	Food Processing Technology	30	10 th Pass	2 years
2	Servicing and Maintenance of Electrical Appliances	Electrical Engineering	30	10 th Pass	2 years
3	Repairing & Maintenance of Auto and Farm machineries	Mechanical Engineering	30	10 th Pass	years

2.1.4 ADMISSION PROCEDURE:

Admission to all Certificate courses shall be made on the basis of a National Level Entrance Test (GET-I). General principles relating to reservation, quota for the candidates of West Bengal State, Other States and U.T. are given in **Section 2.5.2**

2.2 DIPLOMA PROGRAMME

The objective of the Diploma programme is to produce supervisory level technical manpower. More emphasis is given on practical oriented class work with an extensive training in industry.

2.2.1 ENTRY QUALIFICATION:

The minimum qualification for admission to the Diploma programmes is 10+2 pass with Physics, Chemistry & Mathematics from a recognized board/university or a Certificate pass from GKCIET in any trade. Minimum Marks in the qualifying examination is 50% (45% in case of candidates belonging to reserved categories).

2.2.2 DURATION: The duration of Diploma programme is 2 years.

2.2.3 DISCIPLINES: Available disciplines and information regarding distribution of seats in Diploma programmes are given below in Table.

Distribution of Seats for Diploma Programme for the Academic Session 2012-13

Sr. No.	Department	Sanctioned Seats	Seats for Vertical mobility of GKCIET students	Seats for Direct Entry
1	Food Processing Technology	30	15	15
2	Electrical Engineering	30	15	15
3	Mechanical Engineering	30	15	15
Total		90	45	45

2.2.4 ADMISSION PROCEDURE: There are two categories of seats in this programme as per Table. (i) Vertical Entry Seats (ii) Direct Entry Seats

i) DIRECT ENTRY SEATS: 10+2 pass with Physics, Chemistry and Mathematics from recognized Board/University with minimum marks in the qualifying examination is 50% (45% for SC/ST.)

ii) Vertical Mobility of GKCIET Students: Minimum marks in the Certificate examination is 50% (45% in case of SC/ST) and admission shall be based on a test to be conducted by the institute consisting of two papers. Paper-I 100 marks, common courses (Physics, Chemistry and Mathematics & Communication Skills) and Paper-II 100 marks on respective trade. Both paper-I and Paper-II shall have equal weightage.

2.3 Linkage between various Certificate and Diploma Programme for the Academic Session 2012-2013

CERTIFICATE PROGRAMME	Percentage	DIPLOMA PROGRAMME
Food Processing Technology	50%	Food Processing Technology
Electrical Engineering	50%	Electrical Engineering
Mechanical Engineering	50%	Mechanical Engineering

2.4 PRINCIPLES OF RESERVATION APPLICABLE TO ALL ADMISSIONS:

All admissions will be made on merit determined for admission. In case of tie among two or more candidates, candidate elder in age as per the relevant entry in the matriculation certificate shall be placed higher in merit. Again, if there is tie in age (date of birth), candidate having higher marks in qualifying examination shall be placed higher in merit.

2.5 RESERVATION OF SEATS*:

2.5.1 Seats to which reservation apply: *Reservation will be as per latest guidelines issued by the Government of India from time to time.

2.5.2. Territorial Quota:

Seats meant for certificate courses are bifurcated for the candidates of the State of West Bengal and for the candidates belonging to other States, respectively in the following proportion:

I) Certificate Programme

Quota for West Bengal 75%

Quota for Other States and U.T 25%

II) Diploma Programme

Quota for West Bengal 50%

Quota for Other States and U.T 50%

2.5.3 Rules for Operating Reservation:

(i) Candidate passing qualifying examination from the Schools / Institutes falling in West Bengal State will be eligible for reservation marked for West Bengal State and all others will be eligible to claim reservation for Other States & U.T. for admission to Certificate / Diploma Programmes. Candidates passing qualifying examination from National Open School or as a private candidate will be entitled to claim territorial quota on the basis of their domicile.

(ii) Seats remaining unfilled in OBC category will be offered to general category, as per instructions of Govt. of India as may be applicable from time to time.

(iii) For applying to avail reservation under OBC category, the candidates will be required to submit adequate proof/certificate, issued by the competent authority as may be prescribed from time to time in evidence of his/her not belonging to creamy layer. The criteria of creamy layer will be applied as may be prescribed by the Govt. of India from time to time. **The above proof/certificate should pertain to the year just preceding the year of GET Examination (for the financial year ending on March 31, 2012).**

(iv) For claiming seats reserved for Physically Handicapped candidates, the minimum degree of disability should be 40%. Seats falling to the share of Physically Handicapped candidates in various branches are inter changeable depending upon

the availability/suitability of candidates. However, in any branch (as well as in the total seats meant for direct entry) number of seats will not exceed the prescribed quota of 3%. To claim reservation under Physically Handicapped candidate's category, the candidate is required to submit a certificate from the Chief Medical Officer of the district concerned clearly mentioning about the extent/degree of disability. The admission to this category will be governed by the rules of Govt. of India as may be applicable from time to time. The decision of admission committee, regarding the suitability of a candidate for a particular branch for claiming reservation under this category, shall be final and binding on the candidates.

(v) The seats remaining vacant in any branch due to non availability/suitability of eligible candidates belonging to physically handicapped category will be shifted to general category in that branch.

2.6 PATTERN OF EXAMINATION:

GET-I will have two papers each of two hours duration. **Paper-I** will include English, General Awareness & Mathematics and **Paper-II** will pertain to Physics and Chemistry. **GET-II** will also have two papers each of two hours duration. **Paper I** will include English, General Knowledge and Mathematics and **Paper II** will pertain to Physics and Chemistry. **Note: Question paper in all the above examinations will have objective type questions with multiple choice types.**

2.7 CENTRES FOR GET-I and GET-II 2012:

(Numbers before the name of the city in following table indicate centre code)

Centre Code	Centre
01.	Govt. Polytechnic College, Malda (WB)
02.	NITTTR-Kolkata
03.	NITTTR-Bhopal
04.	NITTTR-Chandigar
05	NITTTR-Chennai

2.8 ON LINE APPLICATION AND APPLICATION FEE:

Application Form for online submission will be available in Institute website: <http://www.gkciет.in> from 20th July, 2012 to 10th August, 2012. Before online submission of the application form, candidate has to deposit the application fee of **Rs 500/-** (For SC/ST candidates **Rs 300/-**) through bank challan. The same is to be downloaded from the website: <http://www.gkciет.in>. After the deposit of the application fee the bank will issue a Transaction ID, the same is to be entered in the online application form to complete the submission process and to download the Admit Card. A print out of the admit card and the institute copy of the bank challan receipt are to be produced at the examination centre without which candidates will not be allowed to appear the examination.

2.9 GKCIET ENTRANCE TEST-2012

Entrance Test conducted for admission to Certificate and Diploma programme (Direct entry seats) is termed as GKCIET Entrance Test-I (GET-I) and GKCIET Entrance Test-II (GET-II) respectively. A separate entrance test for admission to vertical mobility seats of Diploma programme for GKCIET certificate level passed students shall be conducted on a separate date.

2.9.1 Schedule of Test:

Test	Date	Time	Paper
GET-I	18-08-12	10:00 -12:00 Hours 14:00 -16:00 Hours	Paper-I Paper-II
GET-II	19-08-12	10:00 -12:00 Hours 14:00 -16:00 Hours	Paper-I Paper-II

2.10 FEE STRUCTURE FOR ACADEMIC YEAR 2012-2013

FEE STRUCTURE FOR ACADEMIC YEAR 2012-2013: Will be displayed on the web site of the institute.

2.11 PATTERN OF ENTRANCE EXAMINATION FOR CERTIFICATE PROGRAMME, 2012-13

GKCIET Entrance Test GET-I for admission to Certificate Programme will consist of two papers each of two hours duration.

Paper-I: This paper will have 100 objective type questions of 100 marks from English, General knowledge, Mental Aptitude and Mathematics.

Paper-II: This paper will also consist of 100 objective type questions of 100 marks from Physics and Chemistry.

Note : *In both the papers candidate is required to attempt all the questions. Answers of all the objective type questions are to be filled in the OMR answer sheet/ blank numbered sheet given separately. There will not be any negative marking.*

2.11.1 Paper-I :

SYLLABUS AND MODEL QUESTIONS

Marks : 100 Time : 2 Hours

ENGLISH, GENERAL KNOWLEDGE, MENTAL APTITUDE

Marks: 25 (25 Questions)

Syllabus :

1. Usage of Tenses
2. Fill in the Blanks with prepositions
3. Active Passive Voice
4. General Knowledge/Awareness
5. Aptitude Test.

MATHEMATICS

Marks: 75 (75 Questions)

Syllabus :

ALGEBRA : Integers, rational and irrational numbers, ratio and proportions. Polynomials, GCD and LCM of Polynomials by factorization method. Linear equations in one variable; solution of simultaneous equations. Quadratic equations and their solutions. Law of indices.

TRIGONOMETRY: Trigonometric ratios-sin x, cos x, tan x, cot x, cosec x and sec x for 0o, 30o, 45o, 60o and 90o. Trigonometric Identities. Use of Trigonometric tables. Simple problems on heights and distances.

MENSURATION : Perimeter and area of a triangle, square, rectangle, rhombus, trapezium, quadrilateral and circle. Volume and surface area of cube, right prism, cylinder, cone and sphere.

GEOMETRY : Point, line, collinear points, intersecting and non-intersecting lines in a plane. Family of lines, concurrent lines, distance between two parallel lines. Angle-acute, obtuse and right angles. Triangle, its sides and angles. Similarity of triangles. Congruence of triangles. Pythagoras theorem and its converse. Circle. Diameter and circumference of a circle. Arc and sector of a circle. Chord and segment of a circle. Tangent to a circle. Family of concentric circles. Direct and transverse common tangents. Centroid, and orthocentre.

STATISTICS : Collection and tabulation of statistical data. Graphical representation of statistical data, Bar diagram, histograms, pie-charts. Measures of central tendency (Mean, median, mode).

MATHEMATICS

Objective Type Questions :

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q.1 The name of the city which is known as a pink city.

(a) Chandigarh (b) Mumbai (c) Jaipur (d) Delhi

Q.2 In a right angled triangle the sides perpendicular to each other are 15 cm and 8 cm. Its perimeter is :(a) 46 cm (b) 60 cm (c) 120 cm (d) 40 cm

PAPER – II

Marks: 100 Time: 2 Hours

PHYSICS

Marks : 50 (50 Questions)

Syllabus :

Motion : Uniform and non-uniform motion (qualitative idea only), displacement, speed and velocity, acceleration, equations of motion.

Force : Definition, Inertia of a body, balanced and unbalanced forces, acceleration, relationship between force, acceleration and mass of an object, action and reaction of forces.

Gravitation : Laws of gravitation, acceleration due to gravity.

Work : Work done by a force, relation between work and energy, kinetic energy and potential energy.

Wave Motion : Nature of wave, propagation of a wave through a medium, type of waves; longitudinal, transverse, simple harmonic motion (graphical representation), amplitude of wave, relationship between wave length, frequency and velocity of wave.

Light : Perception of energy carried by light waves, human eye structure and function of human eye, focal length of eye-lens, image formation on the retina, perception of color-composition of white light.

Heat : Mechanical work and heat, heat and temperature, measurement of temperature, specific heat, thermal expansion, change of state, idea of latent heat, idea about relative humidity.

Electricity: Conductors and resistors, measurement of current, potential difference and resistance. Heating effect of electric current, quantitative relationship between heat, current, resistance and time of flow of current, electric appliances based on heating effect of current, measurement of electric energy, units of electric power and energy.

Magnetic effects of Electric Current : Magnetic field of a current carrying conductor, coil and solenoid, electric motor & its applications, Electromagnetic induction.

Reference Book : Science: for Class-IX and X, Published by NCERT.

Objective Type Questions :

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q.1 The least distance of distinct vision of normal eye is

(a) 30 cm (b) 25 cm (c) 15 cm (d) 20 cm

Q.2 To remove hypermetropia, lens used is

(a) concave (b) convex (c) cylindrical (d) plano-concave 5

CHEMISTRY

Marks: 50 (50 Questions)

Syllabus :

Matter-Nature and Behaviour : Nature and behaviour of different types of substances, elements, compounds and their mixtures, structure of matter, atomic theory, molecules and atom; Structure of atom-electrons, protons and neutrons; composition of nucleus-atomic number and mass number, distribution of electrons in different energy levels in an atom, valence electrons and valency.

Atomic Mass and Molecular Mass:

Mole concept; percentage composition of compounds.

Physical and Chemical Changes: Combination, displacement, decomposition, slow, fast, exothermic and endothermic reactions, catalyst; chemical equations.

Electrochemical Cell: Construction and working of a simple voltaic cell; lead storage battery and dry cell; electrolysis movement of ions during electrolysis; Faraday's Laws; electroplating.

Classification of Elements: Periodic Law, periods & groups; General trend in properties of elements in periodic table.

Fuel : Type of fuels, coal; natural fuels, conditions for combustion, heat produced during combustion, combustion of food in living organisms.

Mineral Cycles : Carbon cycle, role of carbon and its compounds, nitrogen cycle, nitrogen fixation, oxygen cycle, oxidation process, water cycle, role of energy in different cycles.

Water : Water a natural resource, origin of life in it, a medium for the activity of the living, a solvent, uses, saturated and unsaturated solution, sea water as habitat of organism, salts from sea.

Air : Composition, Atmosphere & its role on radiation, Carbon dioxide and its diverse effects on living organism, role of trees, release of carbon dioxide from fossils, fuels and automobiles, corrosion of metals, damage of historical monuments from acidic gases, effect of metallic particles, asbestos, etc., on living organisms. Carbon monoxide and its ill effects, air pollution and its effects on human beings.

Dependence of Man on Natural Resources : Minerals from earth, metals and non-metals, uses of non-metals.

Carbon and its Compounds : Introduction, allotropes of carbon and their occurrence, structure, related properties and uses; hydrocarbons their elementary structure, properties and uses; isomerism (elementary idea); simple compounds of carbon, hydrogen and oxygen and their uses; petroleum products; introductory account of synthetic fibres, plastics, rubber, soaps and detergents.

Extraction of Metals : Metals and non-metals (Si, P,S) occurrence, properties and uses; general metallurgical operations for extraction of pure metal (extraction of copper, iron and aluminum). Properties of metals, uses of metals and nonmetals; properties of some alloys (brass, gunmetal, German silver, Solder, bronze) uses at home and in industry.

Reference Book : Science-A Text Book for Class IX & X, Published by NCERT.

Objective Type Questions

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q.1 Isotopes of an atom have

(a) same mass number (b) different atomic number (c) same atomic number (d) none of the above

Q.2 Chemical name of baking soda is

(a) sodium chloride (b) sodium carbonate (c) sodium bicarbonate (d) none of above.

2.12 SYLLABUS OF GKCIET ENTRANCE TEST GET-II FOR ADMISSION TO DIPLOMA PROGRAMME, 2012

PATTERN OF GET-II

GKCIET Entrance Test GET-II for admission to Diploma Programme will consist of two papers each of two hours duration.

Paper-I : This paper will have 100 objective types questions of 100 marks from English, General Knowledge and Mathematics.

Paper-II : This paper will also consist of 100 objective type questions of 100 marks from Physics and Chemistry.

Note: *In both the papers candidate is required to attempt all the questions. Answers of the objective type questions are to be filled in the OMR answer sheet given separately. There will be no negative marking.*

PAPER I

ENGLISH, GENERAL KNOWLEDGE AND MATHEMATICS

SYLLABUS AND MODEL QUESTIONS

Marks: 100 Time : 2 Hours

ENGLISH AND GENERAL KNOWLEDGE

Marks: 25 (25 Questions)

Syllabus :

1. General Science
2. Idioms and Phrases
3. Events of National & International Importance
4. Fill in the blanks with suitable words/prepositions
5. Correction of sentences
6. Change of Voice
7. Current Affairs
8. Indian National Movement
9. History of India

MATHEMATICS

Marks: 75 (75 Questions)

Syllabus :

Algebra : Solution of quadratic equations, relationship between their roots and coefficients. Equations reducible to quadratic form. Symmetric Functions of roots. Formation of a quadratic equation with given roots. Arithmetic progression, Geometric progression and Arithmetico-Geometric series. Series of natural numbers ($\sum n$, $\sum n^2$, $\sum n^3$). Mathematical induction. Permutations and Combinations, Binomial theorem for any index. Complex numbers. Algebra of complex numbers. Modulus and argument of a complex number. Conjugate of a complex number. Triangle inequality, representation of complex number in ARGAND's Diagram, polar form & exponential form. Square Root of a complex number. Cube roots of unity. De-Moivre's Theorem with simple applications. Vectors, their Scalar product and cross product. Scalar triple product and its applications.

Trigonometry : Trigonometric ratios and their relations. Trigonometric Identities. T-ratios of allied angles. Addition and Subtraction formulae. Transformation of product into sum or difference and vice-versa. T-ratios of multiple and sub-multiple angles. Inverse trigonometric functions. Solution of trigonometric equations. Relations between sides & Trigonometric ratios of the angles of a triangle. Solution of triangles. Heights and distances.

Matrices and Determinants : Determinants of order 2 and 3, their elementary properties. Cramer's rule. Definition of a matrix. Types of matrices. Equality of matrices. Operations on matrices. Symmetric & Skew Symmetric matrices. Singular and non-singular matrices. Minors and cofactors. Adjoint and inverse of a matrix. Application of matrices in solving simultaneous linear equations in 2 and 3 variables.

Coordinate Geometry : Rectangular Cartesian co-ordinates. Distance between two points. Section formulae. Locus of a point. Equation of a straight line in various forms. Angle between two given lines. Condition for two lines to be parallel or perpendicular. Distance of a point from a line. Line through point of intersection of two given lines. Concurrency of lines. Equation of a circle in various forms. Intersection of a circle with a straight line. Equations of tangent and normal to a circle. Intersection of two circles. Parametric representation of equation of a circle.

Equations of the parabola, ellipse and hyperbola in the standard forms & parametric form. Condition for $y = mx + c$ to be a tangent and point of tangency.

Calculus : Function, its domain and range. Limit, continuity and differentiability of a function. Derivative of sum, difference, product and quotient of two functions. Derivative of algebraic, trigonometric, exponential, logarithmic, hyperbolic and Inverse trigonometric functions. Chain rule. Derivative of functions expressed in implicit and parametric forms. Logarithmic differentiation. Tangents and Normals. Rate measure & error. Maximum and Minimum values of a function. Integration as the inverse process of differentiation. Integration by parts, by substitution and by partial fractions. Integration of rational and irrational functions. Definite integral and its application for the determination of area (simple cases). Trapezoidal & Simpson Rules.

Objective Type Questions

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q.1 The house burnt for hours before the blaze was put.....

(a) off (b) away (c) out (d) up

Q.2 nth derivative of a^x is:

(a) a^x (b) $a^x \log a$ (c) a^{nx} (d) $a^x (\log a)^n$

PAPER II

Marks:100 Time: 2 Hours

PHYSICS

Marks: 50 (50 Questions)

Syllabus :

Units and dimensions, SI Units, displacement, velocity, acceleration. Projectiles, circular motion, concepts of relative motion; Newton's Law of motion, concepts of uniformly accelerated frames, momentum, frictional force and gravitational force, work, energy, power, conservation of momentum and energy. Universal law of gravitation, gravitational potential and fields, acceleration due to gravity. Angular momentum, torque, equilibrium of rigid bodies. Hook's Law, Young's modulus, shear and bulk moduli, Bernoulli's theorem and its applications. Simple concept of amplitude, frequency and phase, longitudinal and transverse waves, harmonic and wave motions, superposition of waves, progressive and stationary waves, vibration of strings and aircolumns, resonance, beats. Velocity of sound, Echoes, Doppler effect. Thermal expansion of solids, liquids and gases. Kinetic theory of gases, specific heats, Isothermal and adiabatic process, laws of thermodynamics & their applications, Stefans law and Newton's law of cooling, Coulombs law, electric fields and electric potentials, lines of forces. Capacitance, dielectric constant, parallel plate capacitor, capacitor in series and parallel, energy stored in capacitor, charging and discharging of capacitors. Electric current, Ohm's law, series and parallel arrangements of resistances and cells. Kirchoffs law and its applications to network, heating effects of current. Biot-Savart's law and its application. Force on a moving charge and on a current carrying wire in magnetic field. Magnetic moment of a current loop, effect of a uniform magnetic field on current loop, moving coil galvanometer, voltmeter, ammeter. Electromagnetic induction, Faraday's and Lenz's law, definitions of self and mutual-inductance. Rectilinear propagation of light. Reflection and refraction at plane and curved surface, total internal reflection and critical angles. Deviation and dispersion of light by a prism. Thin lens, combinations

of mirror and lens, magnifications, microscope, telescope. Wave nature of light, interference, diffraction and polarization, Radioactivity, alpha, beta and gamma radiations, laws of radioactivity, decay constant, half life and mean life. Photoelectric effect. Bohr's theory of hydrogen like atoms, x-rays production and properties. Atomic nucleus, binding energy and its calculation. Fission and fusion processes. Elementary concepts of thermionic emission and work function, diode valve as a rectifier, Elementary ideas of conductor, semi-conductor and insulator, intrinsic and extrinsic semi-conductor, P-N junctions as a rectifier.

Reference Book : Physics Class XI and XII Published by NCERT.

CHEMISTRY

Marks : 50 (50 Questions)

Syllabus :

Atomic Structure & Classification of Elements: Rutherford's Model, spectra of hydrogen atom, Bohr's model, quantum numbers, Pauli's exclusion principle, Hund's rule, Aufbau principle, electronic configuration of elements, shapes of s, p and d orbitals. Periods and groups, classification of elements with respect to s, p and d-block, periodicity in properties, namely atomic and ionic radii, ionization energy, electronegativity and oxidation states.

Stoichiometry : Calculations involving common oxidation reduction, neutralization and displacement reactions, use of mole concept.

Behaviour of Gases : Avogadro's Law, equation of state and ideal gas, Vander waal's equation, diffusion of gases, kinetic theory of gases, average, root mean square and most probable velocity and their relation with temperature, Gay Lussac's Law. **Solutions :** Expressing concentration in terms of mole fraction, molality, molarity and normality, Raoult's Law and molecular weight determination from lowering of vapour pressure.

Chemical Equilibrium, Kinetics and Energetics: Law of mass action, equilibrium constants K_c , K_p and their relationships, Le-Chatelier's principle and its applications, ionic equilibria in aqueous solutions, solubility product, common ion effect, acid-base theories (Bronsted and Lewis), hydrolysis of salts, pH, buffer solutions. Rate of reaction, order of reaction, molecularity, rate constant and half-life period of first order reaction, variations of rate constant with temperature (Arrhenius equation). Heat of formation, heat of combustion and heat of reaction, Hess's Law, bond energy.

Electrochemistry : Faraday's Law of electrolysis, galvanic cells, cell reactions, Nernst equation, standard potential, and electrochemical series, e.m.f. of cells involving the following electrodes only: Zn/Zn^{++} , Fe^{++}/Fe^{+++} , Sn/Sn^{++} , $(Pt)H_2/H^+, Cl_2(Pt)$.

Ores and Minerals : Commercially important ores of iron, tin, silicon, aluminum, lead, iron, copper, silver and zinc with their extractive metallurgy (chemical principles and reactions only, industrial details excluded). i) Carbon reduction method (iron and tin); ii) Self reduction method (copper and lead); iii) Electrolytic reduction method (magnesium and aluminum); iv) Cyanide process (silver). Transition elements (only the first series) definition, general characteristics properties viz. variable oxidation states, colour [details of electronic transition excluded], paramagnetism, [formation of complexes, stereochemistry excluded].

Preparation and Properties of the following Compounds : Oxides, hydroxides, carbonates, bicarbonates, chlorides and alums, oxides and chlorides of tin and lead,

ferrous sulphate, Mohr's salt, ferric oxide and ferric chloride, copper sulphate, oxide and sulphate of zinc, silver nitrate and silver bromide. Hydrogen peroxide, carbon oxides and carbides, silicones and silicone carbides, nitrogen and phosphorous, oxides and oxy acids of ammonia, fertilizers, sulphur oxides, sulphurous and sulphuric acids, sodium thiosulphate and hydrogen sulphide, halogens, oxyacids of chlorine, bleaching powder.

Isolation, Preparation and Properties of Non-Metals: Silicon, nitrogen, phosphorous, oxygen, sulphur, fluorine, chlorine, bromine and iodine (properties of allotropes of carbon, preparation and properties of ozone included). **Alkanes,**

Alkenes Alkynes and Benzene: Preparation of alkanes (Wurtz reaction and decarboxylation reaction), substitution reaction of alkanes (including mechanism). Preparation by dehydrohalogenation of respective alkyl halides and by dehydration of alcohols, addition reactions (Markownikoff's and anti-Markownikoff's rule including mechanism, ozonolysis). Benzene structure, properties, nitration, sulphonation, halogenation, acylation and alkylation reactions, effect of o-, p- and m-directing groups in monosubstituted benzenes.

Characteristics Reactions of following Organic Compounds: Alcohols (esterification, dehydration, oxidation, reactions with sodium, phosphorous halides and zinc-chloride/conc.HCl), phenols (halogenation, nitration, sulphonation and Reimer-Teimann reaction), aldehydes and ketones (oxidation, reduction, oxime and hydrazone formation, aldol condensation, Cannizaro's reaction, haloform and Grignard reactions).

Objective Type Questions

Fill the choice of the alternative you think to be correct answer in the OMR answer sheet.

Q.1 The instrument which measures temperature by radiation is called:

(a) Thermopile (b) Thermometer (c) pyrometer (d) Galvanometer

Q.2 The reaction of formation of ethyl alcohol from ethylbromide in the presence of aq. KOH is

(a) Addition reaction (b) Elimination reaction (c) Substitution reaction (d) None of these

3. PRINCIPLES OF RESERVATION APPLICABLE TO ALL ADMISSIONS:

All admissions will be made on merit determined for admission. In case of tie among two or more candidates, candidate elder in age as per the relevant entry in the matriculation certificate shall be placed higher in merit. Again, if there is tie in age (date of birth), candidate having higher marks in qualifying examination shall be placed higher in merit.

4. ADMIT CARDS:

Admit Cards will be issued online to those eligible candidates who have submitted the on-line application form complete in all respects and with requisite fee before the closing date. The admit card shall be downloaded from the institute's website. The candidate should carefully examine the admit card received by him/her for all the entries made therein. The roll number is the prime mean of locating the application and it should always be quoted in all correspondence & enquiry. No applicant will be permitted to enter the examination hall without a valid admit card.

The admit card should be preserved carefully till the admissions for the session 2012-13 are over.

5. Merit List for Direct Entry Seats:

A candidate has to obtain a minimum marks in aggregate for inclusion in the merit list. Candidate who fails to appear in one or any of the two papers will not be included in the merit list. For admission in certificate a common merit list shall be prepared and the candidates will be allotted trade/branch/specialization as per his/her merit and choice and the availability of seats in the said trade/branch/specialization of the programme. The list of qualified candidates as will be displayed on the **Institute Website: www.gkciet.in**. Request for marks and re-evaluation of the answer sheets will not be entertained.

5.1 Counseling: The exact schedule of counseling and number of candidates called will be displayed on the website of the Institute namely **www.gkciet.in**. **No separate Call Letters will be sent to the candidates for attending Counseling.** However, if a candidate fails to attend counseling in time due to any reason, he may appear in the next available counseling. Such candidate will have to keep track of the next available counseling schedule which will be available on Institute website and participate therein without waiting for any intimation in this behalf. His/her claim in such subsequent counseling in which he/she may participate may be considered in accordance with his/her merit/choice and availability of seats in a particular trade/ branch/specialization during the said subsequent counseling.

5.2 Medium of Examination: candidates appearing for the entrance test for Certificate and Diploma Programme answer the questions of Physics, Chemistry & Mathematics in English. Question Papers for these subjects will be provided in English..

5.3 GENERAL INFORMATION:

5.3.1. Candidate appearing in the Entrance Test for admission is allowed provisionally, subject to production of his/her Certificate having passed the qualifying examination on or before the day of counseling of the concerned programme, failing which his/her candidature shall be deemed to have been cancelled.

5.3.2. Academic Calendar and study scheme along with syllabi shall be given to all the admitted students after start of the classes. Semester system will be followed for Certificate and Diploma Programmes.

6. IMPORTANT INFORMATION

Date of Examination

- | | | |
|-------------------------|----------|------------|
| • Certificate Programme | (GET-I) | 18-08-2012 |
| • Diploma Programme | (GET-II) | 19-08-2012 |