26. ANTI-RAGGING

Ragging in any form is banned in CIT and any one indulging in ragging during the entire period of his/her study in CIT is likely to be punished appropriately which may include expulsion from the Institute, suspension from the Institute or classes for a limited period, or fined with a public apology. The punishment may also take the shape of:

a. Withholding Results
b. Withholding Scholarships or other benefits
c. Suspension or expulsion from the Hostel or Mess or Collective Punishment if the individual committing or abetting ragging is not identified, and/or an entry in the conduct certificate mentioning the act of ragging indulged in by the students concerned.

Admitted students shall have to submit an affidavit on a non-judicial stamp paper duly notarized by the Oath Commissioner by the student and the parent/guardian separately in a format that is available in the website http://www.antiragging.in/Site/Affidavits_Registration.aspx within fifteen days from the date of admission otherwise the admission stands cancelled. Further all the students admitted into the hostels have to submit a separate affidavit provided in CIT admission website.

27. FORMAT AND SYLLABI OF CITEE-2020:

The Central Institute of Technology Entrance Examination (CITEE)-2020 will be conducted in three hours of duration with a total of 150 marks. The question paper will consist of five (5) sections: A, B, C, D & E. Section-A consists of twenty five questions in Physics carrying one mark each, Section-B of twenty five questions in Chemistry carrying one mark each, Section-C of twenty five questions in Biology carrying one mark each, Section-D of fifty questions in Mathematics carrying one & two marks & Section-E twenty five questions in English carrying one mark each. The questions will be multiple choices with four options of answers.

SECTION-A
PHYSICS (25 marks)

Units and Measurement of Physical Quantities:
Fundamental and Derived units, System of Units, Accuracy of measurement, measuring instruments.

Force and Motion: Uniform and non-uniform motion, Scalar and vector quantities, Graphical representation, Vector addition and subtraction, Speed and velocity, Distance-time, speed-time and velocity-time graph, Uniform acceleration, Equations of motions and their applications, Force and acceleration , Newton's laws of motion, mass and inertia, Concept of momentum, relation between force and momentum.

Gravitation: The universal laws of gravitation, Newton's third law and gravitation, acceleration due to gravity, Concept of mass and weight, Laws of freely falling bodies under gravity, centre of gravity and its determination for a regular body.

Vibration and Waves: Elementary ideas of periodic and simple harmonic motion, time-period and frequency of the simple harmonic motion, Simple pendulum and restoring force, Graphical representation of waves, Wavelength, frequency and velocity of the waves, Longitudinal and transverse waves, Sound waves, Application of ultra sound waves.

Work, Power and Energy: Work done by a constant force, Kinetic and potential energy, Power and its units.

Heat and thermometry: Concept of temperature, measurement of temperature using thermometer, Fahrenheit and Celsius scales of temperature, Heat energy, specific heat, mechanical equivalent of heat, Change of state and concept of latent heat, Humidity of air.
Magnetism: magnet and its property, poles of a magnet, magnetic lines of force, different kinds of magnet, Magnetic domains.
Light: Laws of reflection and refraction, reflection and refraction of light at plane and curved surfaces, spherical mirrors, Refraction by spherical lenses, Ray diagram for locating images by lenses and mirrors, Lens and mirror formula and their uses, Linear magnification , Human eye and defects of vision.
Basic Electricity: Charges, Electric lines of force, potential due to a charge, Motion of charges and electric current, Ohm's law, Series and parallel combination of resistances, Electric current and transfer of energy, Electromagnetism and effect of current, Elementary ideas of electromagnetic induction, Electric motor, Generation and domestic uses of electricity.
Solar system and the Universe: Stars and galaxy, the sun and the solar system, planets and their motion, the origin of the universe, Artificial Satellites.
Nuclear Energy: Concept of nucleus of an atom, nuclear fission and fusion, Nuclear reactor.

SECTION-B
CHEMISTRY (25 marks)

Atomic structure: Dalton's atomic theory, elements, compounds, cathode ray, X-ray, radio-active radiations, Rutherford model of atomic structure, Bohr's model of atomic structure and electronic configurations, Electronic configuration of the elements up to Atomic No. 18, Radioactivity and properties of α, β and Ɣ rays, Radio-isotopes and their uses, Nuclear fission and fusion reactions.
Classification of Elements: Mendeleev and modern periodic table, Electronic configuration of each group, periodic trend of metallic and non-metallic character, atomic size, nature of bonding, ionization potential and electron affinity, prediction of properties of an element and their compounds.
Chemical bonding: Octet rule and inert gas configuration as criteria of stability, ions, atoms and valency, Ionic bonds , covalent bonds (in simple cases), shape of molecules of H_2O,NH_3, CH_4,CCl_4, C_2H_4, SF_6, PCl_5.
Chemical reactions: Decomposition, displacement reactions, Isomerization reaction, combination reactions, chemical formula and equations, Atomic and molecular masses, Mole concept, gram atomic mass, Determination of formula of unknown compounds and balancing of equations.
Energetic: Bond energy, Energy involved in a reaction, Photo-chemical reactions and generation of free radicals, Electrolysis of water and NaCl, Electrochemical cells (Galvanic cell), Dry cells, Storage cells, metallic corrosion.
Metals: Physical and chemical properties, Metal reaction with O_2 , dil acid, Cl_2, Electrochemical series and displacement of metals from the solutions, Elementary metallurgy of Fe, Al and uses of metals, Washing soda, Baking soda , lime, preparation of Bleaching Powder, Plaster of Paris.
Non-metals: Physical and chemical properties, reaction with O_2, acid, Cl_2, H_2,Manufacture of NH_3 and its reaction with O_2, HCl & CuO, Extraction of Sulpur and its reaction with O_2, conc.HNO_3 and conc.H_2HO_4, Carbon and its compounds, Allotrophes of carbon, hydrocarbon, alkanes, isomerism in alkanes, Petroleum, Preparation and properties of CH_3OH, $C2H_2OH$, general methods of preparation, properties of organic acids-COOH group, esters, Nylon, Polyester, Rubber, Soap, detergents, Biomass as fuel, fossil fuel, coal, petroleum, Natural gas,

classification of fuels, Calorific value of fuel, Ignition of temperature, combustion of fuel, Ideal fuel. Coal deposits on earth, constituents of lithosphere, Greenhouse effect, Oceans, composition and its important function.

Practical: Carbon, Nitrogen and O_2 cycles on earth, Solubility and saturated solutions, solutions and suspension, distillation, hard and soft water, To show the presence of CO_2, water vapor and dust particle in atmosphere, To identify the combustion product of fuels(CO_2 and H_2O only), condition of rusting, effect of heating on Sulphur, Primary air pollutant, Solubility of ionic and covalent compounds in any given solvent, electrical conductivity of ionic and covalent compounds, Determination of m.p., b.p. of ionic and covalent compounds, Heat change during melting of solid or freezing of liquids. Physical change and chemical changes, (Fe+S mixing and heating), Heat of reaction and Heat of dissolution, Construction of Voltaic cells, Relationship between current, time and metal deposited during electrolysis of copper.

SECTION-C
BIOLOGY (25 marks)

Ways of living Habitats: Living places and programme, the habitat, Micro-habitats, Interdependence, Land, Water and Air as habitats, Adaptation, Terrestrial and Aquatic habitats, Adaptation in plants and animals.

Organization in the living world: Level of organization, species and population, General basis of organization, Discovery of Cell, Cell Theory, Prokaryotic and Eukaryotic cell, Ultra-structure of cell, Cell organelles and their function, Cell Division, Amitosis, mitosis and meiosis, linkages and crossing over and its importance, mutation, Genetic Disorders.

Life Process-I: Nutrition: autotrophic, heterotrophic, mode of nutrition, Photosynthesis, Respiration, Transpiration, Transport of materials, Essential elements and its deficiency symptoms, Blood circulation, Lymph, Excretion, Chemosynthesis, Plant growth and Movement.

Life Process-II: Reproduction: asexual and sexual, Control and Coordination, Chemical coordination in plant and animals, the nervous systems, Pollination and fertilization in flowering plants, fertilization, embryo development, Development of seeds and fruits.

Human Beings: Structure of human body, Digestion and absorption, Breathing and respiration, Body fluids and circulation, excretory products and elimination, Locomotion and movement, Control and coordination, Impact of human on environment.

Nutrition: Energy requirement of the body, Balance diet, Components of our food, Deficiency diseases, Factors leading to deficiency in nutrition, Excessive intake of food.

Food Production: Agriculture task in food production, Food production trends in our country, Food derived from animals, Trends in food production from animals, Animal husbandry, fish as a source of animal food.

Health: Community and personal health, Factors affecting health, Food poisoning, Organic or metabolic diseases, Pollution related diseases, Diseases related to habitat forming substances, Preventive measures, Reproductive health, birth control, contraception and sexually transmitted diseases, Health education, Health and development.

Biosphere: Structure and function of ecosystem and biosphere, Food chain, Food web, Flow of energy, Cycling of material, Ecological succession, Natural Resources and their conservation, Environmental pollutions, global Environmental changes, Biotic Resources, Environmental ethics and legislation, Botanical garden and herbaria, Zoological parks and Museum.

Man and his environment: Human activity, Abiotic and biotic component of environment, Interrelationship between man and his environment, Natural resources, Overexploitation, conservation , management and replenishment, Industrialization, Recycling of waste materials.

SECTION-D
MATHEMATICS (50 marks)

Algebra: Sets, their representation and notation, equivalent and equal sets, Finite and infinite sets, Subset, Null set, universal set of a set, Venn Diagrams, set theory operations and their algebra(union, intersection and complement).

Natural numbers, Integers, Rational and Irrational numbers, Surds (Quadratic surds only)

Polynomials and their operations, factorization of polynomials, First Degree equations and in-equations and their solutions including graphical solution for two variables, Solutions of simultaneous equations, Rational expressions, Quadratic equations and their solutions, Laws of indices, logarithms, Arithmetic progression(A.P.), Generation of an A.P., Sum of n terms of an A.P., Simple problems.

Geometry: Point, Line, Collinear Points, Intersecting and non-intersecting lines in a plane, Family of lines Triangles, Congruence Relation in the Set of all triangles; Basic proportionality theorem, Parallelogram & their properties, Pythagoras' theorem and its converse. The concept of a circle as a set of points in a plane, Interior and exterior of a circle. Diameter and circumference of a circle. Arc and sector of a circle. Chord and segment of a circle. Cyclic Quadrilateral. Secant and tangent of a circle. Family of concentric circles. Family of circles through a given point, con cyclic points, circles and common tangent. Direct and transverse common tangents.

Co-ordinate Geometry: Distance between two points, Section formula, Problems related with mid-point & Centroid of triangles.

Trigonometry : Trigonometrical ratios sin x, cos x, tan x, Cot x , cosec x , for 0° 30°, 45°, 60°, 90°. Simple trigonometrical identities, Trigonometrical ratios of complementary angles. Problems on height and distances (Problems should not involve more than two right triangles).

Mensuration: Concept of perimeter, Area of triangle, square, rectangle, rhombus, trapezium, parallelogram, quadrilateral, circle and circular ring. Volume of cure, Problems on finding volumes and surface areas of combinations of right circular cone, right cylinder, hemisphere & sphere, conversion of solids (not more than two solids).

Statistics & Statistical Data: Introduction of Statistics, Primary & Secondary data, Raw/Ungrouped and grouped data (in case of raw data, the number of observations should not exceed 30). Frequency Table: Class marks, Class intervals, frequency, frequency table, cumulative frequency, cumulative frequency table (in grouped data only equal intervals should be taken).

Measures of Central Tendency: Mean of raw and ungrouped data, Median and Mode of raw data, Properties of mean, median & mode and their significance, relation of mean median & mode.

SECTION –E
ENGLISH (25 marks)

GRAMMAR: The Sentences: Types, Question Tags/Tags Questions, Nouns, Use of Tenses, Non Finite Verbs, The Agreement of verbs with subjects, Adverbs- Position and its Special Use, Comparisons, Prepositions, Co-ordinations and Sub-ordination, Conditionals, Transformation of Sentences, Voice-Active and Passive, Joining of Sentences (Synthesis), Direct and Indirect Speech, The Sequence of Tenses, The Same Word used as Different parts of Speech, Punctuation and Capital Letters.

Vocabulary and Usage: Diminitives, Synonyms, Antonyms, One Word Substitutes, Making Verbs from Nouns and Adjectives, Making Adjectives from Nouns, Making Nouns from verbs, Words followed by Appropriate Prepositions, Proverbs, Verbal Phrases, Miscellaneous

Idiomatic expressions, Legal terms, terms used in technology, Words Often Confused/Misused, Common Errors.

Comprehension.

28. FORMAT AND SYLLABI OF CITDEE 2020

The Central Institute of Technology Degree Entrance Examination (CITDEE)-2020 will be conducted in a duration of three hours with a total of 125 marks. The question paper will consist of four (4) sections: A, B, C & D. Section A consists of twenty five questions in Physics carrying one mark each, Section B consists of twenty five questions in Chemistry carrying one mark each, Section C consists of twenty five questions in English carrying one mark each and Section D consists of fifty questions in Mathematics carrying one or two marks each. The questions will be of multiple choices with four options of answers.

SECTION-A
PHYSICS (25 marks)

Unit 1: Physics and Measurement

Physics, technology and society, SI units, Fundamental and derived units. Least count, accuracy and precision of measuring instruments, Errors in measurement, Significant figures. Dimensions of Physical quantities, dimensional analysis and its applications.

Unit 2: Kinematics

Frame of reference. Motion in a straight line: Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity uniformly accelerated motion, velocity-time, position- time graphs, and relations for uniformly accelerated motion. Scalars and Vectors, Vector addition and Subtraction, Zero Vector, Scalar and Vector products, Unit Vector, Resolution of a Vector. Relative Velocity, Motion in a plane, Projectile Motion, Uniform Circular Motion.

Unit 3: Laws of Motion

Force and Inertia, Newton's First Law of motion; Momentum, Newton's Second Law of motion; Impulse; Newton's Third Law of motion. Law of conservation of linear momentum and its applications, Equilibrium of concurrent forces.

Static and Kinetic friction, laws of friction, rolling friction. Dynamics of uniform circular motion: Centripetal force and its applications.

Unit 4: Work, Energy and Power

Work done by a constant force and a variable force; kinetic and potential energies, work energy theorem, power. Potential energy of a spring, conservation of mechanical energy, conservative and non-conservative forces; Elastic and inelastic collisions in one and two dimensions

Unit 5: Rotational Motion

Centre of mass of a two-particle system, Centre of mass of a rigid body; Basic concepts of rotational motion; moment of a force, torque, angular momentum, conservation of angular momentum and its applications; moment of inertia, radius of gyration. Values of moments of inertia for simple geometrical objects, parallel and perpendicular axes theorems and their applications. Rigid body rotation, equations of rotational motion.

Unit 6: Gravitation

The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Kepler's laws of planetary motion. Gravitational potential energy; gravitational potential. Escape velocity. Orbital velocity of a satellite. Geo-stationary satellites.

Unit 7: Properties of Solids and Liquids