

इन्जिनियरिङ्ग संकाय अन्तर्गत BE (Computer Engineering) कार्यक्रमको प्रवेश परीक्षाको अंक वितरण सारः

स्नातक तहमा अंग्रेजी, गणित, भौतिकशास्त्र र रसायन शास्त्र विषय गरी जम्मा ३ घण्टामा १५० पूर्णाङ्कको प्रति प्रश्न १ र २ अंकका दरले जम्मा १०० वटा वस्तुगत (Objective type) प्रश्नहरू हुनेछन् ।

विषय	परीक्षाको पूर्णाङ्क	परीक्षा समय	प्रश्नपत्र संख्या	प्रस्तावित अंक भार
गणित	४०	३ घण्टा	१०×१+ १५×२	१ अंकका १० प्रश्न २ अंकका १५ प्रश्न
भौतिक शास्त्र	४०		१०×१+ १५×२	१ अंकका १० प्रश्न २ अंकका १५ प्रश्न
अंग्रेजी	३०		२०×१+ ५×२	१ अंकका २० प्रश्न २ अंकका ५ प्रश्न
रसायन शास्त्र	४०		१०×१+ १५×२	१ अंकका १० प्रश्न २ अंकका १५ प्रश्न
जम्मा	१५०	३ घण्टा	१००	

S.N.	Subject/Topic	Number of Question	Type of question		Total Marks
	English	25	S	L	30
1.	Reading passage	5		×2	10
2.	Grammar	15	×1		15
3.	Vocabulary	3	×1		3
4.	Phonemes and stress	2	×1		2
	Chemistry	25			40
1.	Physical chemistry	10		×2	20
2.	Inorganic chemistry	10	×1		10
3.	Organic Chemistry	5		×2	10
	Physics	25			40
1.	Mechanics	7		×2	14
2.	Heat and Thermodynamics	5	×1		5
3.	Waves and optics	5	×1		5
4.	Electricity and magnetism	4		×2	8
5.	Moderns physics and Electronics	4		×2	8
	Mathematics	25			40
1.	Set and function	2		×2	4
2.	Algebra	8	×1		8
3.	Trigonometry	3		×2	6
4.	Coordinate geometry	5		×2	10
5.	Calculus	5		×2	10
6.	Vectors	2	×1		2
Total		100	50	50	150

Equivalent weight and Atomic Weight: Concept of equivalent weight and valency, determination by hydrogen displacement method and oxide method, Concept of atomic Weight, equivalent weight and valency, determination of atomic weight using Dulong and Petit's rule;

Molecular Weight and Mole

Avogadro's hypothesis and its deductions: Avogadro number and concept of mole, Determination of molecular weight by Victor Meyer's method;

Electro-Chemistry: Electrolytes and non-electrolytes, strong electrolytes and weak electrolytes, Faraday's laws of electrolysis, Solubility product principle and its applications in qualitative analysis;

Theories of Acids and Bases: Arrhenius theory, Bronsted and Lowry theory, Lewis theory,

Volumetric analysis: Equivalent weight of acids base and salts, Principle of acidimetry and alkalimetry, pH and pH scale.

Non-Metals

Water: Hard water and soft water, Causes and removal of hardness of water;

Nitrogen and its Compounds: Nitrogen cycle, Preparation of ammonia and nitric acid in the lab, and their properties, Manufacture of ammonia and nitric acid,

Sulphur and its compounds: Allotropy of Sulphur, Preparation of hydrogen sulphide, Sulphur dioxide in the lab, their properties, Manufacture of sulphuric acid by contact process;

Halogens and their Compounds: position of halogens in the periodic table, preparation of chlorine and hydrogen chloride in the lab, their properties.

Metals

Compounds of Metals: General methods of preparation and properties of oxides, hydroxides, chlorides, nitrates, sulphates and carbonates of metals;

Sodium: Extraction of sodium (Down's Process) Manufacture of caustic soda sodium carbonate;

Copper: Extraction of copper from copper pyrite, Manufacture of Blue vitriol;

Zinc: Extraction of zinc from zinc blend, Galvanization;

Iron: Extraction of cast iron from hematite, Castiron, steel and wrought iron, Types of steel, Manufacture of steel.

Organic Chemistry

Source and Purification of organic Compounds: Source of organic compounds, purification of organic compounds

Classification and nomenclature of organic Compounds: Functional group homologous series and isomerism (structural only), Classification of organic compounds, common names, and I.U.P.A.C. naming system.

Saturated and unsaturated Hydrocarbons and Aromatic Compounds: Preparation and properties of methane, preparation and properties of ethylene and acetylene: Alkyl Halides: Preparation and properties of ethyl iodide; Aromatic compounds: structure of benzene, Preparations of benzene in the laboratory, properties of benzene.

Mechanics

Dimensions, Equations of motion, Motion of a projectile. Laws of motion, Addition and subtraction of vectors, Relative velocity, Equilibrium of forces, Moments, Center of mass, Centre of gravity, Solid friction. Work, power and energy, Conservation of energy, Angular speed, Centripetal force, Moment of inertia, Torque on a body, Angular momentum, Rotational kinetic energy, Laws of gravitation, Gravitational intensity, Gravitation potential, Velocity of escape, Simple harmonic motion, Energy of SHM, Hooke's Law, Breaking stress, Modules of elasticity, Energy stored in stretched wire, Surface tension phenomenon, Surface energy, Capillarity, Fluid pressure, Pascal law of transmission of fluid pressure, Archimedes' principle, Flotation, Stokes' law, Terminal velocity.

Heat

Heat and temperature, Temperature scale, Measurement of heat energy, Specific heat capacity, Latent heat, Saturated and Unsaturated vapour, Relative humidity and dew point, First law of thermodynamics, Reversible isothermal and adiabatic changes, Gas laws, kinetic theory of gases, Second law of thermodynamic, Carnot's engine, Transfer of heat, conduction, convection and radiation, expansion of solid, liquid and gas.

Optics

Formation of images by plane and curved mirrors, Refraction of light through plane surface, Total internal reflection, Critical angle, Refraction through prism, Maximum and minimum deviation, Formation of images by lenses, Dispersion, Achromatic combination of lenses visual angle, Angular magnification, Defect of vision, Telescope and microscope. Wave theory of light: introduction to Huygen's principle and application, interference diffraction and polarization of light.

Sound

Damped vibration, Forced oscillation, Resonance, Progressive waves, Principle of superposition. Velocity of sound in solid, liquid and gas: Laplace's correction, Characteristics of sound wave, Beat phenomenon, Doppler effect, Stationary waves, Waves in pipes, Waves in String.

Electricity

Electric Charge, Gold leaf electroscope, Charging by induction Faraday's ice pail experiment, Coulomb's law, Permittivity, Electric field, Gauss's law and its application, Electric potential, Capacitors, Ohm's Law, Resistance-combination of resistance, emf, Kirchhoff's law and its application, Heating effect of current, Thermoelectricity, Chemical effect of current, Potentiometer, Wheatstone bridge, Galvanometer, Conversion of galvanometer into voltmeter and ammeter, Magnetic field, Earth's Magnetism, Magnetic flux, Force on a current carrying conductor, Ampere's law, Blot-Savart's law and their applications, Solenoid, Electromagnetic, induction, AC circuits.

Atomic Physics and Electronics

Discharge electricity through gases, Cathode rays, Electronic mass and charge, Bohr's theory of atomic structure, Energy level, X-ray, Photoelectric effect, Radioactivity, Nuclear-fission and fusion, Semiconductors, junction Transistor.

Set and Function

Set and relations, Functions and graphs, Algebraic, Trigonometric, Exponential, Logarithmic and hyperbolic functions and their inverses,

Algebra

Determinants, matrices, Inverse of a matrix, uses of complex numbers, Polynomial equations, sequence and series, Permutation and combination, Binomial theorem, Exponential, Logarithmic series,

Trigonometry

Trigonometric equations and general values, Inverse trigonometric function, Principal values, Properties of triangles; Centroid, Incentre, Orthocenter and Circumcenter and their properties.

Coordinate Geometry

Coordinates in plane, Straight lines, Pair of lines, Circles. Conic Sections: Parabola, ellipse and hyperbola. Standard equations and simple properties, Coordinates in space, Plane and its equation.

Calculus

Limit and continuity of functions, Derivatives and application of derivative- Tangent and normal, Rate of change, differentials dy and actual change Δy , Maxima and minima of a function; Anti derivatives (integrations): rules of Integration, Standard integrals, Definite integral as the limit of a sum, Application to areas under a curve and area between two curves,

Vector

Vector in space, addition of vectors, Linear combination of vectors, Linearly dependent and independent set of vectors, Scalar and vector product of two vectors, simple applications.