

कार्यप्रणाली वा सूचना जारी गर्ने सक्नेछ । त्यस्तो सूचनामा उल्लेखित आचारसंहिता वा सर्त उल्लंघन गर्ने विद्यार्थी माथि त्यसै नियमको परिच्छेद १३ मा उल्लेखित सजाय दिन सकिनेछ र त्यस्तो सजाय दिन पाउने अधिकारी सोही परिच्छेदमा उल्लेख भए बमोजिम हुनेछ ।

१५. अन्य जानकारी

- सम्पूर्ण शैक्षिक गतिविधिहरू र विभागमा हुने विदाहरूको सम्बन्धमा ग्राजुएट स्कूल अफ इन्जिनियरिङ्गबाट प्रकाशित गरिने शैक्षिक पात्रो (Academic Calendar) बाट जानकारी लिन सकिने छ ।
- विभाग आवत जावतका लागि दैनिक यातायातको व्यवस्था विद्यार्थी स्वयंले गर्नुपर्नेछ ।

द्रष्टव्य :

प्रतिलिपि प्रमाणित गर्ने व्यवस्था विभागले गर्ने छैन । आधिकारिक व्यक्तिबाट प्रमाणित गराउने जिम्मेवारी आवेदक स्वयंको हुने छ ।

यस पुस्तिकामा उल्लिखित व्यवस्था सम्बन्धित अख्तियारवालाको परिवर्तन लागू गर्नका लागि यस पुस्तिकामा छापिएको कुरा बन्देजको रूपमा मानिने छैन । यस पुस्तिकामा प्रकाशित भएको कुनै व्यवस्था नियमसँग बाझिन गएमा बाझिएको हदसम्म यो व्यवस्था लागू हुने छैन ।

१६. ग्राजुएट स्कूल अफ इन्जिनियरिङ्गको प्रवेश परीक्षाको अंक वितरण सार

स्नातक तहमा अङ्ग्रेजी, गणित, भौतिकशास्त्र, तथा रसायन शास्त्र विषय गरी जम्मा २ घण्टामा १०० पूर्णाङ्कको प्रति प्रश्न १ अंकका दरले जम्मा १०० वटा वस्तुगत (Objective Type) प्रश्नहरू हुनेछन् ।

विषय	परीक्षाको पूर्णाङ्क	परीक्षा समय	प्रश्नपत्र संख्या	प्रस्तावित अंक भार
गणित	४०	२ घण्टा	४०	१ अंकका ४० प्रश्नहरू
भौतिक शास्त्र	३०		३०	१ अंकका ३० प्रश्नहरू
अङ्ग्रेजी	१०		१०	१ अंकका १० प्रश्नहरू
रसायन शास्त्र	२०		२०	१ अंकका २० प्रश्नहरू
जम्मा	१००	२ घण्टा	१००	



17.1 Syllabus of Mathematics [40%]

The syllabus shall be based on requirements for level of understanding of Mathematics for pursuing B.E. degree and largely based on revised syllabus of NEB. It consists of seven (7) chapters, with each chapter consisting of 2-4 sub-chapters, as outlined hereunder. Each university may decide on distribution of weightage across each chapter/sub-chapter.

1. Set, Logic and Functions

1.1 Set, real number system, intervals, absolute value, logic, connectives, laws of logic
1.2 Function, types of functions – injective, surjective, bijective, algebraic, trigonometric, exponential and logarithmic; Inverse of function, composite functions

2. Algebra

2.1 Matrices and determinants, types and properties, inverse of a matrix
2.2 Complex numbers and Polynomial equations
2.3 Sequence and series, Permutation and Combination
2.4 Binomial theorem, exponential and logarithmic series

3. Trigonometry

3.1 Trigonometric equations and general values
3.2 Inverse trigonometric functions, principal value
3.3 Properties of triangles, in-centre, ortho-centre and circum-centre, solution of triangles

4. Coordinate Geometry

4.1 Straight lines, pair of lines
4.2 Circles, equations of circle in different forms, tangent and normal
4.3 Conic sections: Parabola, Ellipse and Hyperbola, standard equations and simple properties
4.4 Coordinates in space, Plane and its equation

5. Calculus

5.1 Limit and continuity of functions, indeterminate forms, L'Hospital's rule
5.2 Derivatives, rules of derivatives, geometrical & physical meanings, higher order derivatives, applications of derivative: tangent and normal, rate of change, maxima and minima
5.3 Integration, linear properties, rules of integration, standard integrals, definite integral, applications of definite integral: area under a curve and area between two curves
5.4 Differential equations, order and degree, differential equation of first order and first degree: variable separable method, homogeneous, linear and exact differential equations, integrating factor



6. Vectors and their Products

6.1 Vectors in plane and space, algebra of vectors, linear combination of vectors, linearly dependent and independent set of vectors

6.2 Product of two vectors, scalar and vector product of two vectors, scalar triple

product 7. Statistics and Probability

7.1 Measures of location and measures of dispersion

7.2 Correlation and regression

7.3 Basic terms of probability, conditional and compound probability, additive and multiplicative rules, Bayes' theorem, binomial distribution

17.2 Syllabus of Physics [30%]

The syllabus shall be based on requirements for level of understanding of Physics for pursuing B.E./B.Arch. degree and largely based on revised syllabus of NEB. It consists of six (6) chapters, with each chapter consisting of 4-7 sub-chapters, as outlined hereunder. Each university may decide on distribution of weightage across each chapter/sub-chapter.

1. Mechanics

1.1 Physical Quantities, Vector and Kinematics: Dimensions, Resolution and Polygon laws of Vector, Vector Algebra, Equations of Motions, Projectile Motion, Relative Motion 1.2 Newton's Laws of Motion and Friction: Conservation of linear momentum, Applications of Newton's Laws in Equilibrium and Non-equilibrium, laws of Solid Friction and verification

1.3 Work, Energy and Power: Work-Energy theorem, Kinetic and Potential energy, Conservation of Energy, Conservative and non-conservative forces, Elastic and inelastic collisions

1.4 Circular motion, Gravitation and SHM: Centripetal force, Conical Pendulum, Banking of Track, Gravitational Potential, variation of g , Motion of satellite, Rocket launch technology, Energy in SHM, Spring-Mass system, simple Pendulum, Damped and Forced oscillation, resonance

1.5 Rotational Dynamics: Moment of Inertia, Radius of Gyration, Rotational KE, Center of gravity and center of mass, Torque, Conservation of Angular momentum 1.6 Elasticity: Hook's law, Young modulus, Bulk modulus, modulus of rigidity, Poissons' ratio, elastic energy

1.7 Fluid Mechanics: buoyancy, flotation, Archimedes' principle, surface tension, capillarity and applications, viscosity, Newton, Stoke and Poiseuille's formula, Reynold number, continuity equation, Bernoulli's equation

2. Heat and Thermodynamics

2.1 Temperature and Quantity of Heat: Thermal Equilibrium, Specific heat, latent heat Method of Mixture, Measurement of specific heat and latent heat, Newton's law of cooling, triple point

2.2 Thermal expansion: Expansion of Solid & Liquid, Measurement and Applications of expansions

2.3 Transfer of Heat: Conduction, Convection, Radiation, Thermal Conductivity, Black body radiation, Stefan- Boltzmann law

2.4 Thermal properties of Matter: Molecular Properties of matter, Kinetic Theory of gases, heat capacities of gases and solids



2.5 Laws of Thermodynamics: First law, Heat and Work, relation of specific heat of gas, thermodynamics processes, Second law, Heat engine, efficiency, Carnot Cycle, Otto Cycle, Diesel cycle, Refrigerator, Entropy.

3. Geometric and Physical Optics

3.1 Reflection: Plane and Curved Mirror, Mirror Formula

3.2 Refraction: Plane Surface, Critical Angle, Total Internal Reflection, Lateral shift, Prism, Minimum Deviation, Lenses, Lens Formula, Lens maker's formula, Combination of lenses in contact, Optical Fiber

3.3 Dispersion: Spectrum, Dispersive Power, Chromatic Aberration, Achromatism, Spherical Aberration, Scattering of light

3.4 Nature and Propagation of Light: Huygen's principle, Velocity of

light 3.5 Interference: Coherent sources, Young's double slit experiment

3.6 Diffraction: Fraunhofer diffraction, Diffraction grating, Resolving

power 3.7 Polarization: Brewster's law, Transverse nature of light, Polaroid

4. Waves and Sound

4.1 Wave Motion: Travelling and Stationary wave

4.2 Mechanical Waves: velocity of sound in solid, gas and liquid, effect of temperature, pressure, humidity

4.3 Waves in Pipes and String: closed and Open pipes, Resonance, Resonance Tube, string, laws of vibration of fixed string

4.4 Acoustic Phenomena: Pressure amplitude, intensity level, quality and pitch, Ultrasonic and Infrasonic, Doppler's effect

5. Electricity & Magnetism

5.1 Electrostatics: Coulomb's law, Electric field and Gauss law, Potential and potential gradient, Capacitors, combination of capacitors, types of capacitors, effect of dielectrics, Energy stored by capacitors, polarization and displacement

5.2 DC Circuits: Ohm's law, resistivity and conductivity, work and power, Galvanometer and Ohm meter, internal resistance, Joule's law, Kirchhoff's law and applications 5.3

Thermoelectric Effect: Seebeck effect, Thermocouples, Peltier effect, Thermopile, Thomson effect

5.4 Magnetic effect: Force on a conductor and charge, Torque, Hall's effect, Biot-Savart's law, Ampere's law, Force between parallel conductors

5.5 Magnetic properties of matter: Earth magnetism, magnetic materials, permeability, susceptibility, hysteresis

5.6 Electromagnetic Induction: Faraday's law, Induced emf, AC Generators, Self and mutual induction, energy stored by inductor, transformer

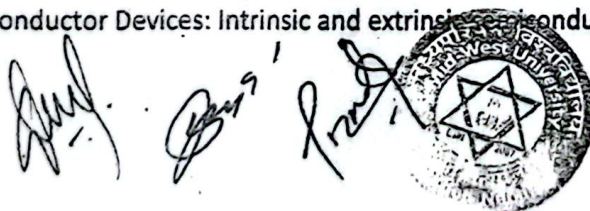
5.7 Alternating Currents: RMS value, Phasor diagram of capacitance, inductance and resistance, Quality factor, Power factor

6. Modern Physics

6.1 Electrons: Millikons's experiment, Cathode rays, specific charge

6.2 Photons & Quantization of Energy: Photoelectric effect, Plank's constant, Bohr's theory, spectral series, De Broglie theory, Uncertainty principle, 'X-ray and Bragg's law, Laser

6.3 Solids & Semiconductor Devices: Intrinsic and extrinsic conductors, P-N junction,



Rectification, Zener diode, Transistor, Logic gates

6.4 Radioactivity & Nuclear Reaction: Atomic mass, Isotopes, Nuclear density, Einstein's mass energy relation, mass defect, fission & fusion, law of radioactive disintegration, carbon dating, health hazard

6.5 Recent Trends in Physics

6.5.1 Particle Physics: Particle and anti-particle, Quarks, Lepton, Baryon, Mesons, Higgs Boson

6.5.2 Universe: Big Bang and Hubble's Law, Dark Matter, Gravitational Wave, Black Hole

6.5.3 Seismology: Pressure wave, Surface Wave, Internal wave

6.5.4 Telecommunication: Radio, TV and Mobile, GPS and Remote

sensing 6.5.5 Environment: Energy Crisis, Environment Pollution, Ozone

Layer

6.5.6 New Technology & Materials: Nano-technology, super conductor & Perfect conductor

17.3 Syllabus of Chemistry [20%]

The syllabus is based on requirements for level of understanding of Chemistry for pursuing B.E. degree and largely based on revised syllabus of NEB. It consists of three (3) chapters, with each chapter consisting of 3-8 sub-chapters, as outlined hereunder. Each university may decide on distribution of weightage across each chapter/sub-chapter.

1. Physical Chemistry

1.1 Chemical Arithmetic: Dalton's atomic theory and Laws of Stoichiometry, Atomic mass and Molecular mass, Empirical molecular formula and limiting Reactants, Avogadro are Hypothesis and its applications and Equivalent masses.

1.2 State of Matter: Gaseous state, liquid and solid states.

1.3 Atomic Structure and Periodic Classification of Elements:

1.4 Oxidation, Reduction and Equilibrium

1.5 Volumetric Analysis,

1.6 Ionic Equilibrium, Acid, Base and Salt

1.7 Electrochemistry

1.8 Energetic of Chemical Reaction, Chemical Kinetics, Chemical Bonding and Shape of Molecules

2. Inorganic Chemistry

2.1 Non-metal: Hydrogen, Oxygen, Ozone, Water, Nitrogen and its compounds, Halogen, Carbon, Phosphorous, sulphur, Noble gas and Environment pollution.

2.2 Metals: Metallurgical Principle, Alkali metal, Alkaline Earth metals, Coinage metals: Copper, Silver, Gold

2.3 Extraction of Metal: Zinc and Mercury, Iron Compound

3. Organic Chemistry

3.1 Introduction: Fundamental principles, Purification of organic compounds, Nomenclature of Organic compounds, Structure isomerism and idea of reaction mechanism

3.2 Hydrocarbons: Alkanes, Alkenes and Alkynes, Aromatic



hydrocarbons 3.3 Haloalkanes and Haloarenes

3.4 Alcohols, Phenols and Ethers

3.5 Aldehydes, Ketones, Carboxylic Acid and Derivatives, Aliphatic and Aromatic 3.6 Nitro Compounds and Amines: Aromatic and Aliphatic

17.4 Syllabus of English [10%]

The English proficiency test for entrance in engineering is based on general English and it is designed to measure students' abilities to communicate in English. It consists of four (4) chapters, with each chapter consisting of 4-8 sub-chapters, as outlined hereunder. Each university may decide on distribution of weightage across each chapter/sub-chapter.

1. Vocabulary

- 1.1 Synonyms and antonyms
- 1.2 Homonyms, homophones
- 1.3 Word building, suffixes and prefixes
- 1.4 Meaning of words in context
- 1.5 Idioms and phrases

2. Grammar

- 2.1 Articles and possessives
- 2.2 Pronouns, prepositions, adjectives, adverbs
- 2.3 Tenses, modals, conditions
- 2.4 Subject verb agreement
- 2.5 Tag questions
- 2.6 Sentence types and transformations
- 2.7 Voice
- 2.8 Direct and indirect narration

3. Reading Comprehension

- 3.1 Contents/ideas
- 3.2 Reading between the lines
- 3.3 Contextual clues
- 3.4 Reconstruction

(rewording) 4. Writing

- 4.1 Punctuations
- 4.2 Cohesive devices
- 4.3 Coherence
- 4.4 Discourse markers

5. Sounds of English

- 5.1 Phonemes
- 5.2 Phonemics symbols
- 5.3 Word stress
- 5.4 Intonation



Amul *Qns* *Ans*

१८. नमुना प्रश्नहरू

Mid-West University
Graduate School of Engineering
B.E. ENTRANCE EXAMINATION -2080
SAMPLE QUESTIONS

Full Marks: 100 Time: 2 Hrs

Select the best Alternative (30×1=30)

- 1) Which of the following word is ascented on its third syllable?
a) cosmology b) cosmopolitan
c) cosmetic d) cosignatory
- 2) The number of atoms of oxygen present in 11.2 litre of oxygen grs at NTP will have a)
 $12 \times 6.023 \times 10^{23}$ b) $2 \times 6.023 \times 10^{23}$
c) 6.02310^2 d) 1.6×10^{24}
- 3) The oxidation number of sulphur in H_2SO_5 will be
a) 8 b) 7 c) 6 d) 4.5
- 4) The equivalent weight of $KMnO_4$ basic medium is
a) Mol wt/6 b) Mol wt/5 c) Mol wt /1
- 5) The dimension of permittivity of a medium is
a) $M^{-1}L^{-3}T^2$ b) $M^1L^3T^2$
c) MLT^{-2} d) $MLT^{-2}I$
- 6) An object of mass m is revolving in a vertical circle of radius r. The tension in the object at the top of the vertical circle will be
a) mg b) $mv^2/r + mg$
c) mv^2/r d) $mg - mv^2/r$
- 7) When a metal sphere is heated, the percentage expansion is maximum for its a)
area b) diameter
c) volume d) length
- 8) The latent heat energy of a substance signifies
a) decrease in the internal energy of the substance
b) increase in the temperature of the substance
c) to produce the chemical changes in the substance
d) increase in the internal energy of the substance
- 9) Let $A = (-3, 2)$ and $B = (-2, 3)$ then $A-B =$

Amul *Qns* *Ans*



- a) $[-3, 3]$ b) $(-3, 3)$
 c) $[-3, -2]$ d) $(-2, 2)$
- 10) If the equation $x^2 + 2(k+2)x + 9k = 0$ has equal roots then $k =$
 a) 1 or 4 b) -1 or -4 c) 1 or -4 d) -1 or 4
- 11) The eccentricity of a hyperbola is
 a) less than 1 b) equal to 1
 c) greater than 1 d) equal to zero
- 12) The term 'obesity' means
 a) curiosity b) observation
 c) unhealthy weight growth d) healthy weight growth
- 13) 100 CC of centimolar H_2SO_4 50ml of decimolar HCl and 500CC of 0.012 molar KOH is mixed, the resultant solution will be
 a) acidic b) basic
 c) neutral d) amphoteric
- 14) A young boy requires 12000KJ energy per day. The amount of energy evolved from 1 mole of glucose is 2808 KJ. What weight of glucose he needs for a week.
 a) 769.64gms b) 2.694kg
 c) 5.39kg d) 10.78kg
- 15) Two identical electric bulbs rated 1 KW; 220v are connected in series and the combination is connected to 200V supply line. The power dissipated in each bulb is around.
 a) 50W b) 100W c) 200W d) 250W

१९. परीक्षार्थीले पालना गर्नुपर्ने नियमहरू

Please note that sharing your knowledge with other examinees is not only against the examination rules but also against your own interest.

1. As soon as the invigilators inform that the time allocated has over, examinees must stop Writing.
2. Examinees should bring their own mathematical box and pen. To borrow anything from the fellow examinees is strictly prohibited.
3. Examinees are not allowed to bring programmable calculator and cell phone in exam hall.
4. Examinees should not engage themselves in any sort of discussions with the invigilators.
5. An examinee breaking the examination regulations will be subjected to a serious punishment.
6. Should any dispute in relation to the entrance examination occur the decision of the GSE Entrance Examination Board regarding the dispute will be final.
7. Illegible or unintelligible answers will be regarded as invalid.
8. It is not allowed to use any paper and answer sheet book. Whatever a question needs space for answer the facing page may be used. The facing page may be used for rough calculations.

