

GUJARAT TECHNOLOGICAL UNIVERSITY
Diploma to Degree Common Entrance Test
Revised DDCET (Engineering) Exam Syllabus - 2024-25

Program	Paper Number	Paper	No. of question	Maximum Marks	Time Duration
Engineering (All Branches)	Basics of Science and Engineering.	BE 01	50	100	150 Min. (Two & Half Hours)
	Aptitude Test (Mathematics and Soft Skill)	BE 02	50	100	
	Total		100	200	

Section -01- BE-01 Basics of Science and Engineering

Sr. No.	Topic	Sub-Topic	Weightage (%)
1	Units and Measurement	<ul style="list-style-type: none"> • Physical quantities and units. • Interconversion of units MKS (SI) to CGS and vice versa. • Errors, Estimation of error, relative error, percentage error, propagation of errors. • Measurement with Vernier caliper and micrometer screw gauge. 	12
2	Classical Mechanics	<ul style="list-style-type: none"> • Linear motion, velocity, acceleration, force, Newton's laws of motion, linear momentum and impulse of force. • Circular motion, angular velocity, angular acceleration, centripetal and centrifugal force. • Work, energy, kinetic energy, potential energy, power. 	12
3	Electric Current	<ul style="list-style-type: none"> • Ohm's Law and application • Charge, interaction of charges, Coulomb's force. • Electric field, electric potential, electric flux, electric current. • Resistance, conductance, resistivity, conductivity, series and parallel combination of resistors. • Capacitance, parallel plate capacitor, series and parallel combination of capacitors. 	12
4	Heat and thermometry	<ul style="list-style-type: none"> • Modes of heat transfer • Various temperature scale, conversion of temperature, Kelvin – Celsius, Kelvin – Fahrenheit, Fahrenheit – Celsius and vice versa. • Heat capacity and specific heat. • Thermal conductivity, coefficient of thermal conductivity, linear thermal expansion. 	12

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5	Wave motion, optics and acoustics	<ul style="list-style-type: none"> • Types of waves, (progressive, stationary, mechanical, non-mechanical, transverse, longitudinal). • Frequency, wavelength, periodic time and their relations. • Properties and applications of electromagnetic waves (ordinary light, LASER) and sound waves (ultrasonic wave, audible wave). • Amplitude, intensity, phase and wave equations. • Reflection, refraction, Snell's law, absolute refractive index, relative refractive index, total internal reflection, critical angle, optical fiber (construction, properties and applications). • Reverberation, Reverberation time, Sabine's formula, echo, absorption coefficient. 	12
6	Chemical Reactions and Equations	<ul style="list-style-type: none"> • Chemical Equations: Writing a Chemical Equation, Balanced Chemical Equations. • Types of Chemical Reactions: Combination Reaction, Decomposition Reaction, Displacement Reaction, Double Displacement Reaction. 	6
7	Acids, Bases and Salts	<ul style="list-style-type: none"> • Understanding the Chemical Properties of Acids and Bases. • Reaction of Metallic Oxides with Acids. • Reactions of an Acid or a Base in Water Solutions. • Importance of pH in Everyday life. • Salts: Family of salts, pH of salts. 	8
8	Metals and Non-metals	<ul style="list-style-type: none"> • Physical properties of Metals and Non-metals. • Chemical Properties of Metals. • How do Metals and Non-metals React? : Properties of Ionic compounds. • Corrosion of Metals. 	6
9	Computer Practice	<ul style="list-style-type: none"> • Basics of Computer System • Introduction to Internet HTML • Using MS - Word /MS-Excel/MS-Power Point 	10
10	Environmental Sciences	<ul style="list-style-type: none"> • Ecosystem • Pollution and its types • Climate Change • Renewable Sources of Energy such as Hydro, Solar, Wind, Bio-mass, Tidal and Geothermal - their availability and limitations. 	10

❖ **References :**

1. Std 10 Science State/NCRT Textbook
2. All India Council for Technical Education (AICTE), Model Curriculum for the Diploma Courses in Engineering & Technology-2019.
3. Diploma Syllabus of all Concerned State /Private Universities.

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Section :02 – BE-02 – Aptitude Test (Mathematics & Soft Skill)

Sr. No.	Topic	Sub-Topic	Weightage (%)
1	Determinant and Matrices	<ul style="list-style-type: none"> • Determinant and its value up to 3rd order (Without properties) • Concept of a Matrix • Types of Matrices (Rectangular matrix, Square matrix, Null matrix, Diagonal matrix, Scalar matrix, Identity matrix, Singular and Non-singular matrix) • Addition, Subtraction and multiplication by scalar of matrices • Product of two matrices • Adjoint and Inverse of a matrix of order 2X2. • Solution of Simultaneous linear equations of two variables 	8
2	Trigonometry	<ul style="list-style-type: none"> • Units of Angles (degree and radian) • Trigonometric Functions • Periods of Trigonometric functions • Allied & Compound Angles, Multiple –Submultiples angles • Sum and factor formula 	6
3	Vectors	<ul style="list-style-type: none"> • Introduction of a Vector • Direction and Magnitude • Types of vectors (Null vector, Unit Vector) • Addition, Subtraction. • Scalar product (Dot product) and Vector Product (Cross product) • Angle between two Vectors 	4
4	Coordinate Geometry	<ul style="list-style-type: none"> • Introduction and slope of a line • Equation of a line (Two-point form, Slope point form, Intercept form, General form) • Condition of parallel and perpendicular lines • Equation of Parallel and Perpendicular lines to the given line • Angle between two lines • Equation of a circle with centre and radius • To find centre and radius from general equation of a circle 	4
5	Function & Limit	<ul style="list-style-type: none"> • Function and simple examples • Limit of a Function • Standard formulae of Limit and related simple examples 	6

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6	Differentiation and its Applications	<ul style="list-style-type: none"> • Concept of Differentiation • Working rule: Sum, Subtraction, Product and Quotient • Chain Rule • Derivative of Implicit functions, Parametric functions • Logarithmic Differentiation • Successive Differentiation up to second order • Applications: Velocity, Acceleration of given simple functions 	8
7	Integration	<ul style="list-style-type: none"> • Concept of Integration • Working rules and Integral of standard functions • Method of substitution & Integration by parts (simple examples) • Definite Integral (simple examples) 	8
8	Logarithm	<ul style="list-style-type: none"> • Logarithm as a function • Laws of Logarithm and related Simple examples 	4
9	Statistics	<ul style="list-style-type: none"> • Mean, Median and Mode for ungrouped data 	2
10	Comprehension of Unseen Passage	<ul style="list-style-type: none"> • An unseen passage will be given followed by 5 questions. Students have to read the passage and answer the questions. 	10
11	Theory of Communication	<ul style="list-style-type: none"> • Process of Communication • Verbal and Non-verbal Communication • Barriers to Communication 	10
12	Techniques of Writing	<ul style="list-style-type: none"> • Parts of Letter and Email • Types of Business Letter (Inquiry, Reply, Order, Complaint, Adjustment) • Common Abbreviations used in Business Letter 	10
13	Grammar	<ul style="list-style-type: none"> • Parts of Speech (1) Noun (2) Pronoun (3) Adjective (4) Adverb (5) Verb (6) Preposition (7) Connectors (7) Interjection • Tenses • Subject Verb Agreement 	10
14	Correction of Incorrect Words and Sentences	<ul style="list-style-type: none"> • Word Correction: Students have to choose correct spelling of the word from the options given • Sentence Correction: Students have to choose grammatically or structurally correct sentence from the options given. 	10

❖ **References :**

1. All India Council for Technical Education (AICTE), Model Curriculum for the Diploma Courses in Engineering & Technology-2019.
2. Diploma Syllabus of all Concerned State /Private Universities.