

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma to Degree Common Entrance Test DDCET (Engineering) Exam Syllabus

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 <ul style="list-style-type: none"> (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.