



ENGINEERING MATHEMATICS (20SC01T) RECORDED LECTURE VIDEO LINKS (SESSIONWISE)

By

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Unit Number & Name	Sessions	Video link	Content of the session
Introduction about Subject	Session-0	https://youtu.be/8_eVdO-D0Ng	Detailed Introduction about the Subject.
UNIT-1 MATRICES & DETERMINANTS	Session-1	https://youtu.be/hbv7o5UmKy8	Introduction, Definition, Order of a Matrix, Types of Matrices.
	Session-2	https://youtu.be/JC6Wvr433hI	Algebra of Matrices, Scalar Multiplication, Addition and Subtraction of Matrices.
	Session-3	https://youtu.be/OKbpY6peC8k	Multiplication of Matrices, Transpose of Matrices
	Session-4	https://youtu.be/9SocPHcnuwA	Evaluation of 2*2, 3*3 determinants, Singular matrices, Problems to find x.
	Session-5	https://youtu.be/QDdPTLm5NoA	Cramer's rule for two simultaneous equations.
	Session-6	https://youtu.be/SfPsH0Se7wo	Cramer's rule for three simultaneous equations.
	Session-7	https://youtu.be/cRRnMn7N9Ow	Minor and Cofactor of an element of a matrix, Cofactor Matrix.
	Session-8	https://youtu.be/VS-0ysuu5qk	Adjoint of 2*2 and 3*3 matrices.
	Session-9	https://youtu.be/qH1m6DsPewI	Inverse of 2*2 and 3*3 matrices. $A^{-1} = \frac{1}{ A } (adj A)$
	Session-10	https://youtu.be/6yOiwLLo92A	Characteristic equation and Characteristic roots (eigen values) of a given 2*2 matrices. $ A - \lambda I = 0$

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UNIT-2 STRAIGHT LINES

Session-1 (11)	https://youtu.be/bKuPiUPGcug	Slope of Straight line , finding slope if angle between x-axis and line is given ($m = \tan\theta$), finding slope if two points of a line is given. ($m = \frac{y_2 - y_1}{x_2 - x_1}$)
Session-2 (12)	https://youtu.be/HVhUQ2Y055U	Intercepts of a line, x-intercept and y-intercept and Problems.
Session-3 (13)	https://youtu.be/UxixJD0itpE	Intercept form of straight line $\frac{x}{a} + \frac{y}{b} = 1$ and problems.
Session-4 (14)	https://youtu.be/VVBrW2fYrIU	Slope intercept form of a straight line $y = mx + c$ and problems.
Session-5 (15)	https://youtu.be/hAwrkg8pT90	Slope point form of a straight line $(y - y_1) = m(x - x_1)$ and problems.
Session-6 (16)	https://youtu.be/d7y_vp-U87Q	Two-point form of a straight line $(y - y_1) = \left(\frac{y_2 - y_1}{x_2 - x_1}\right)(x - x_1)$ and problems.
Session-7 (17)	https://youtu.be/dlJG_7DQxPc	General form of straight line $ax + by + c = 0$, slope $m = -\frac{a}{b}$, x - intercept $= -\frac{c}{a}$, y - intercept $= -\frac{c}{b}$ and problems.
Session-8 (18)	https://youtu.be/85jHs53yYGU	Angle between two straight line $\tan\theta = \left \frac{m_1 - m_2}{1 + m_1 m_2}\right $, Condition for two parallel line ($m_1 = m_2$) and Perpendicular lines ($m_1 \times m_2 = -1$) and Problems.
Session-9 (19)	https://youtu.be/j3Za74eKR1k	Equation of Straight line parallel to the given line and problems.
Session-10 (20)	https://youtu.be/qH3CBCMNnw4	Equation of Straight line perpendicular to the given line and problems.

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UNIT-3 TRIGONOMETRY	Session-1 (21)	https://youtu.be/YK1Nd0hkDjg	Concept of Angles, Measurement of Angles , Degree Measure, Radian Measure, Related Conversions, Simple problems
	Session-2 (22)	https://youtu.be/EhaQODoyRj8	Trigonometric ratios of acute angles , Fundamental trigonometric identities, Trigonometric ratios of standard angles, ASTC sign rule
	Session-3 (23)	https://youtu.be/QfylC2-wiuM	Trigonometric ratios of allied angles (Without Proof)
	Session-4 (24)	https://youtu.be/yalVLeTDIV4	Problems on allied angles (Proving identities)
	Session-5 (25)	https://youtu.be/QtdeTMBq15w	Problems on allied angles (Proving identities), Problems on allied angles (Finding the value of x)
	Session-6 (26)	https://youtu.be/NYFiTZ5k5tk	Compound angles , Addition and Subtraction formulae for compound angles (without proof), Standard problems and Simple problems on Compound angles
	Session-7 (27)	https://youtu.be/JYncPU7fNyQ	Trigonometric ratios of Multiple angles . Proving identities, $\sin 2A$, $\cos 2A$, $\tan 2A$, $\sin 3A$, $\cos 3A$, $\tan 3A$.
	Session-8 (28)	https://youtu.be/1_gwCZD2NOk	Simple Problems on Multiple angles .
	Session-9 (29)	https://youtu.be/2X-vkGXbgqo	Transformation formula to express product of ratios into sum or difference of ratios, Transformation formula to express sum or difference into product of ratios, Simple Problems
	Session-10 (30)	https://youtu.be/VRjQvMT2UKY	Problems on transformation formulae continued.

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UNIT-4 DIFFERENTIAL CALCULUS & ITS APPLICATIONS	Session-1 (31)	https://youtu.be/BIFOf4u63BM	Derivative of a function, Geometrical Meaning, Derivatives of Standard functions, Simple problems
	Session-2 (32)	https://youtu.be/syUubwYLS0w	Derivatives of functions by Addition rule and Subtraction rule , Simple problems
	Session-3 (33)	https://youtu.be/jkP8hb1p-hg	Derivatives of functions by Product rule , $\frac{d(uv)}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$, Simple problems
	Session-4 (34)	https://youtu.be/cpb8socwH1w	Derivatives of functions by Quotient rule , $\frac{d(\frac{u}{v})}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$, Simple problems
	Session-5 (35)	https://youtu.be/Jq3tleSyn94	Composite functions, derivatives of functions by chain rule, Simple Problems on Chain rule
	Session-6 (36)	https://youtu.be/ItnduTjwv34	Problems on chain rule
	Session-7 (37)	https://youtu.be/CcQKQQ5SG4c	Successive differentiation, Second order derivative , Problems
	Session-8 (38)	https://youtu.be/9bpLfPxrQH8	Application of Derivatives, Slope of Tangent and Slope of Normal Equation of Tangent and Equation of Normal , Problems
	Session-9 (39)	https://youtu.be/TQa0-lzb7uE	Derivative as a Rate measure, Velocity & Acceleration using rate measure, Problems
	Session-10 (40)	https://youtu.be/1hF2ZzU4KR8	Maxima & Minima of a Function, Steps to Find Maxima & Minima, Problems
	Session-11 (41)	https://youtu.be/E1pOZoknBg4	Problems on Maxima & Minima

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UNIT-5 INTEGRAL CALCULUS & ITS APPLICATIONS	Session-1 (42)	https://youtu.be/VxCnZPCtOWI	Indefinite Integrals Definition, Standard Integrals formulas, Rules of Integration
	Session-2 (43)	https://youtu.be/JPV7_QUvBIY	Simple Problems on Rules of Integration
	Session-3 (44)	https://youtu.be/DONTaBYuMrg	Simple Problems on Rules of Integration
	Session-4 (45)	https://youtu.be/fyRvjPv6Iug	Simple Problems on Rules of Integration
	Session-5 (46)	https://youtu.be/8sixpxU6ZJ8	Simple Problems by Substitution Method.
	Session-6 (47)	https://youtu.be/DD7ApLfWEAw	Integration by parts method and Simple problems
	Session-7 (48)	https://youtu.be/vRabpIDrG_U	Integration by parts method and Simple problems
	Session-8 (49)	https://youtu.be/YNB6PfMEnMY	Definite Integrals, Simple Problems on Definite Integrals
	Session-9 (50)	https://youtu.be/4zIYEXC5brQ	Simple Problems on Definite Integrals
	Session-10 (51)	https://youtu.be/5CJZZiIoS9w	Applications of Definite Integrals: Area under the curve, Simple problems
	Session-11 (52)	https://youtu.be/g1O6RVOo-AI	Applications of Definite Integrals: Volume of Solid of revolution and Simple problems

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