

Marks	Grade Point	Letter Grade	Marks	Grade Point	Letter Grade
80>	4.00	A+	55-59	2.75	B-
75-79	3.75	A	50-54	2.50	C+
70-74	3.50	A-	45-49	2.25	C
65-69	3.25	B+	40-44	2.00	D
60-64	3.00	B	0-39	0.00	F

Daffodil Polytechnic Institute, Institute Code: 50238

Lesson Plan – Academic session: January - June 2024

Mark Distribution (for 200 Marks)			
Theory Marks		Practical Marks	
Midterm	30	PC	25
Class test	20	PF	25
Quiz test	10	-	-
Final	90	-	-
Total	150	Total	50

Subject Teacher : Farha Diba (Sr. Instructor)
 Subject Name : Mathematics- 1
 Subject Code : 25911
 Technology : All Diploma & Textile Engineering
 Semester : 1st
 Reference Book : Mathematics- 1 (Publisher: Haque Publication)

INTENTION

Class Time Distribution (90 Minutes)	
Follow up absent students	5
Previous class review	10
Present class topic discussion	60
Present class topic review	10
Next class topic	5
Total	90

- To able in solving the simultaneous equations with the help of determinant and matrix.
- To make understand the exponential series.
- To able to calculate the areas of circle and solve quadratic equations.
- To provide the ability of calculate and measurement of angles

SHORT DESCRIPTION

Algebra : Determinants, Matrix, Exponential Series. Polynomial and Equation Polynomial, Complex number, Permutation, Combination.

Trigonometry : Associated Angles, Trigonometrical Ratios, Transformation of formulae, Multiple Angles, Inverse circular functions, Trigonometrical Properties of triangles.

Geometry: Co-ordinates to find lengths and area, The equation of straight lines in calculating various parameter, Circle

Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
01	01. Determinants	Projector, Internet, Computer You tube Link: https://w.youtube.com/watch?v=Gsl4RBiWGeM	Explain a third order determinant. -Define minor and co-factors. -State the properties of determinants.	* After the Class, Students will be able: - to learn about the basic concepts of Determinant, minor and Co-factors. - learn how to find minor and Co-factors.
02	01. Determinants	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=I5XbsLCILc4 https://www.youtube.com/watch?v=CdEzFo-nOty	- Solve the problems of determinants. - Apply Cramer's rule to solve the linear equation.	* After the Class, Students will be able: - to learn about the properties of determinants.
03	02. Matrix.	Projector, Internet, Computer. You tube Link: https://www.youtube.com/watch?v=o234uWYF1o8	-Define matrix, null matrix, unit matrix, square matrix. column matrix, row matrix, inverse matrix, transpose matrix, adjoint matrix, rank of a matrix, singular matrix. - Explain equality, addition and multiplication of matrix.	* After the Class, Students will be able to: - learn about matrix, null matrix, unit matrix, square matrix. Column matrix, row matrix, inverse matrix, transpose matrix, adjoint matrix, singular matrix.
04	02. Matrix.	Projector, Internet, Computer You tube Link: https://www.youtube.com/results?search_query=how+to+find++the+rank+of+a+matrix	Find the rank of a matrix (2×3,3×2,3×3 order Matrix). 2.4 Solve the problems of the following types: i) Solve the given set of linear equations with the help of matrix. ii) Find the transpose, adjoint and inverse matrix of a given matrix.	* After the Class, Students will be able to: - understand the equality, addition and multiplication of matrix. - find out the rank of a matrix.
05	Quiz Test-01	Theory Base	Chapter - 01	Be confident on examination.

Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
06	02. Matrix.	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=BCKRha-kfmo	Solve the problems of the set of linear equations with the help of matrix. Find the transpose, inverse and adjoint matrix of a given matrix.	After the Class, Students will be able to: - solve the linear equation with the help of transpose and adjoint matrix of a given matrix. Students can develop a video to explain matrix operations and determinant calculations.
07	Class Test-01	Theory Base	Chapter - 01, 02	Be confident on examination.
Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
08	3. Polynomial and Equation Polynomial	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=6ba5OeV5Sig	(I) Form the equation when the roots of the quadratic polynomial equations are given. (ii) Find the condition of the common roots of quadratic polynomial equations.	* After the Class, Students will be able to: - learn about the relation between roots and co- efficient of the polynomial equations.
09	3. Polynomial and Equation Polynomial	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=RcKoxh98DTo	Solve the problems related to the above.	* After the Class, Students will be able to: - Form the equation when the roots of the quadratic polynomial equations are given. Students can graph any linear polynomial equations in graph paper.
10	Quiz Contest 2	Theory Base	Chapter - 03	Be confident on examination.

Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
11	04. Complex numbers.	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=nWesJDUTAFg&list=PLpv7t8b-MTWT5YMOtREqWWVFd5EsocPgH	Define complex numbers. - Perform algebraic operation (addition, subtraction, multiplication, division, square root) with complex number of the form $a + ib$. .	* After the Class, Students will be able : - to learn about the basic concepts of complex number. - to learn about the complex numbers addition, subtraction, multiplication, division, square root.
12	04. Complex numbers.	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=TGz7CWCxSUU&index=19&list=PLpv7t8b-MTWT5YMOtREqWWVFd5EsocPgH	Solve the problems related to the above.	* After the Class, Students will be able to: - solve the problem
MID TERM				

13	05. Permutation	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=VTZHMZ3MmfA&list=PLmTanlaHOXz5fOcGSYmR_QzjdfTtZTA1a&index=1	Explain permutation. - Find the number of permutations of n things taken r at a time when, i) Things are all different. ii) Things are not all different.	* After the Class, Students will be able to: - solve the problem
14	05. Permutation	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=TLVNq45VdSY&index=12&list=PLmTanlaHOXz5fOcGSYmR_QzjdfTtZTA1a	Solve problems related to permutation: i) Be arranged so that the vowels may never be separated.	* Arranging books on a shelf (permutation) demonstrates these concepts in real-life scenarios.

Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
15	06. Combination	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=urJeMVbiMHk&index=19&list=PLq-SlyBu2IPs5Zn6p8TWQ0nHTHUA8Cah	1. Explain combination. 2. Find the number of combination of n different things taken r at a time	* After the Class, Students will be able to: - learn about the basic concept of Combination - Find the number of combination of n different things taken r at a time.
16	06. Combination	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=nEALBWOCteE&list=PLq-SlyBu2IPs5Zn6p8TWQ0nHTHUA8Cah&index=18	1. Explain nCr , nCn , $nC0$ 2. Find the number of combination of n things taken r at a time in which p particular things i) Always occur ii) never occur Establish i) $nCr = nCn-r$ ii) $nCr + nCr-1 = n+1Cr$	- Selecting a team from a group of players (combination) demonstrates these concepts in real-life scenarios.
17	Class Test-02	Theory Base	Chapter – 04, 05	Be confident on examination.
18	Review class	Theory Base	Chapter- 04, 05, 06 (Regarding students problem)	Be confident of these chapter.
19	07. Trigonometry (Associated angles).	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=bVog_o1Qs80	1. Define associated angles. 2. Find the sign of trigonometrical function in different quadrants	* After the Class, Students will be able: - to know the Define associated angles. - to find out the sign of trigonometrical function in different quadrants

Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
20	07. Trigonometry (Associated angles).	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=bVog_o1Qs80	. Calculate trigonometrical ratios of associated angle.	* After the Class, Students will be able: - to Calculate trigonometrical ratios of associated angle
21	Quiz Test-03	Theory Base	Chapter – 07	Be confident on examination.
22	08. Trigonometrical Ratios.	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=uUh2B9hnl_U	8.1 Define compound angles.8.2 Establish the following relation geometrically for acute angles.i) $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$. ii) $\cos(A \pm B) = \cos A \cos B \pm \sin A \sin B$.	* After the Class, Students will be able : - To know the how Solve problems of the followings types: i) show that, $\sin 55^\circ + \cos 55^\circ = 2 \cos 10^\circ$
23	08. Trigonometrical Ratios.	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=JV7J7Jraket	8.3 Deduce formula for $\tan(A \pm B)$, $\cot(A \pm B)$.8.4 Apply the identities to work out the problems: i) Find the value of $\sin 75^\circ$, $\tan 75^\circ$. ii) Show that $\sin 75^\circ + \sin 15^\circ$, $\sin 75^\circ - \sin 15^\circ = 3$ iii) if $\alpha + \beta = \theta$, $\tan \alpha + \tan \beta = b$, $\cot \alpha + \cot \beta = a$, Show that $(a - b) = ab \cot \theta$.	* After the Class, Students will be able : - To know the how Solve problems of the followings types: ii) prove that, $\cos 80^\circ \cos 60^\circ \cos 40^\circ \cos 20^\circ = 1/16$

Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
24	09. Transformation of formula	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=JV7J7JrakeI	9.1 Express sum or difference of two sines and cosines as a product and vice-versa 9.2 Solve problems of the Following types: i) Show that, $\sin 55^\circ + \cos 55^\circ = 2 \cos 10^\circ$ ii) Prove that, $\cos 80^\circ \cos 60^\circ \cos 40^\circ \cos 20^\circ = 1/16$	* After the Class, Students will be able : - To know how to prove State the identities for $\sin 2A$, $\cos 2A$ and $\tan 2A$. Students can present Pascal's Triangle in a dynamic and interactive way, highlighting the patterns and connections between binomial coefficients used in both permutation and combination calculations.
25	10. Multiple Angles	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=ZEZQIfcDO1M	State the identities for $\sin 2A$, $\cos 2A$ and $\tan 2A$. 10.2 Deduce formula for $\sin 3A$, $\cos 3A$ and $\tan 3A$. 10.3 Solve the problems of the following types. i) express $\cos 5\theta$ in terms of $\cos \theta$. ii) if $\tan \alpha = 2 \tan \beta$, show that, $\tan (\alpha + \beta) = \frac{3 \sin 2\alpha}{1 + 3 \cos 2\alpha}$	* After the Class, Students will be able : - To know the Deduce formula for $\sin 3A$, $\cos 3A$ and $\tan 3A$. Students can graph trigonometric basic ratios and they will be able to complete their theory book of trigonometry.
26	10. Multiple Angles	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=psPqUz8OFMY	Solve the problems related to the above.	* After the Class, Students will be able to: - Students will be able to Plot Diagram of trigonometry

27	Class Test-03	Theory Base	Chapter – 08, 09, 10	Be confident on examination.
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Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
28	10. Inverse circular function	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=JGU74wbZMLg	Explain the term inverse circular function and principal value of a trigonometrical ratio. - Deduce mathematically the fundamental relations of different circular functions. - Convert a given inverse circular function in terms of other functions.	* After the Class, Students will be able to: - perceive about the terms of inverse circular function. - Convert a given inverse circular function in terms of other functions.
29	10. Inverse circular function	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=TkJzAxjCkX8	Prove some mathematically terms of Inverse circular function	* After the Class, Students will be able to: - Solve problems using formula
30	11. Properties of triangles	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=jaGZ93gDbQ8	What are the types of triangles and their properties? Proof of the some trigonometrical identities.	* After the Class, Students will be able to: - understand about the triangles. - Solve problems using above formula.
31	11. Properties of triangles	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=F7Eqv6i	Solve problems related to Properties of Triangle.	*After the Class, Students will be able to: - solve mathematical problems
32	Co-ordinates of points.	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=JMmGMISn5GM	Explain the co-ordinates of a point. 13.2 State different types of co-ordinates of a point. 13.3 Find the distance between two points (x_1, y_1) and (x_2, y_2) .	* After the Class, Students will be able: - to learn about how to find the distance between two points - to learn about how to find the co-ordinates of a point which divides the straight line joining two points in certain ratio.

33	Class Test-04	Theory Base	Chapter – 11	Be confident on examination.
Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
34	Co-ordinates of points.	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=HvPt0IIDGWI&index=4&list=PLxSt9YDBipm5HXTfUnL6D2UpO7-GERw_2	Find the co-ordinates of a point which divides the straight line joining two points in certain ratio. Find the area of a triangle whose vertices are given. Solve problems related to co-ordinates of points and distance formula.	* After the Class, Students will be able to: - to learn how to find the area of a triangle whose vertices are given.
35	The equation of straight lines in calculating various Parameter	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=CgbyjHGYTul&index=1&list=PLxSt9YDBipm79HQR-LBqhQsK6Cbm0uOsc	Define straight line. (i) Find the locus of a point. (ii) Solve problems for finding locus of a point under certain conditions. (iii) Describe the Equation $x=a$ and $y=b$ and slope of a straight line. (iv) Find the slope of a straight line passing through two point (x_1, y_1) and (x_2, y_2) .	* After the Class, Students will be able to: - to learn how to find the slope of a straight line passing through two point.
36	The equation of straight lines in calculating various Parameter	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=UuUkUw333Oo&index=2&list=PLxSt9YDBipm79HQR-LBqhQsK6Cbm0uOsc	Find the equation of straight lines: (i) Point slope form. (ii) Slope Intercept form. (iii) Two points form. (iv) Intercept form. (v) Perpendicular form. Find the point of intersection of two given straight lines. Find the angle between two given straight lines. Find the condition of parallelism and perpendicularity of two given straight lines. Find the distances of a point from a line. Solve problems related to above.	* After the Class, Students will be able to: - to learn about how to find the equation of straight lines: (i) Point slope form. (ii) Slope Intercept form
37	Co-Ordinate Geometry (Circle)	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=dD5ouzf-6E4&list=PLxSt9YDBipm6eu64yYurcnzWUKOUYs6xs	Define circle, center and radius. 15.2 Find the equation of a circle in the form: (i) $x^2 + y^2 = a^2$ (ii) $(x-h)^2 + (y-k)^2 = a^2$ (iii) $x^2 + y^2 + 2gx + 2fy + c = 0$ Find the equation of a circle described on the line joining (x_1, y_1) and (x_2, y_2) .	* After the Class, Students will be able to: - to learn about circle, center and radius - to learn how to find the equation of a circle in the form: (i) $x^2 + y^2 = a^2$

Lec.	Chapter	Class Supporting Equipment's	Learning Area	Learning Outcome
38	Circle	Projector, Internet, Computer You tube Link: https://www.youtube.com/watch?v=Lbb9Wv8LiQM&index=2&list=PLxSt9YDBipm6eu64yYurcnzWUK0UYs6xs	Define tangent and normal. Find the condition that a straight line may touch a circle. Find the equations of tangent and normal to a circle at any point. Solve the problems related to equations of circle, tangent and normal.	* After the Class, Students will be able to: - to learn about how to find the equation of a circle in the form
39	Model test 01	Theory base	All	Be confident of Exam
40	Presentation	Projector, Internet, Computer	Short presentation by Individual student.	Be confident on practical life.