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| **LESSON PLAN: Engineering Mathematics-I** |
| **Discipline :** | **Computer Science and Engineering** |
| **Faculty :** | **Mrs. Rosi Patel** |
| **Semester :** | **1st Semester** |
| **Duration :** | **15 WEEKS (15th September 2022 to 22nd December 2022)** |
| **Work Load :** | **Lecture :** |  **5 Lectures per week (50 minutes per Class)**  |
| Week | **Week****Day** | **Theory** |
| 1st | 1st | **Determinants** (Define Determinants of Second and Third order) |
| 2nd | **Determinants** (Explain Minor (Mij) of aij , Co- factor (Cij) of aij, Explain Cij=(-1)i+jMij) |
| 3rd | **Determinants** (Example Discussion about Minor and Co-factor of Determinants) |
| 4th | **Determinants** (Properties of Determinants) |
|  5th  | **Determinants** (Example Discussion by using properties of Determinants) |
| 2nd  | 6th |  **Determinants** (Properties of Determinants) |
| 7th |  **Determinants** (Example Discussion by using properties of Determinants) |
| 8th |  **Determinants** (Cramer’s Rule: Solution of simultaneous equations of two  unknowns) |
| 9th |  **Determinants** (Problems discussion on Cramer’s Rule) |
| 10th |  **Determinants** (Cramer’s Rule: Solution of simultaneous equations of three  unknowns) |
| 3rd | 11th |  **Determinants** (Problems discussion on Cramer’s Rule) |
| 12th |  **Matrix** (Definition and its representation state its order) |
| 13th |  **Matrix** (Types of Matrices with Examples) |
| 14th |  **Matrix** (Equality of Matrices, Addition and its properties, product and its  properties) |
| 15th  |  **Matrix** (Transpose and Adjoint of a Matrix with Example) |
| 4th  | 16th |  **Matrix** (Multiplicative inverse of a square Matrix with example) |
| 17th |  **Matrix** (Solution of a system of Linear Equations by Matrix method) |
| 18th |  **Matrix** (Example Discussion on solution of linear Equation by Matrix  method) |
| 19th |  **Trigonometry** (Preliminary ideas, Trigonometrical Functions, Circular  Functions and their identity ) |
| 20th  |  **Trigonometry** (Trigonometric Ratio and ASTC Rule with Example) |
| 5th | 21st  |  **Trigonometry** (Formula Discussion on Trigonometry) |
| 22nd  |  **Trigonometry** (Problem Discussion by using Trigonometric Formulae) |
| 23rd  |  **Trigonometry** (Discuss about addition and Subtraction Formula) |
| 24th  |  **Trigonometry** (Example Discussion by using Formula) |
| 25th  |  **Trigonometry** (Properties of Triangle, Sine, Cosine and Tangent and  Projection Formula) |
| 6th | 26th  |  **Trigonometry** (Problem solving on Properties of Triangles) |
| 27th  |  **Trigonometry** (Napier’s Formula/tangent Formula, Area of Triangle with  Example) |
| 28th  |  **Trigonometry** (Introduction about Inverse function and Inverse  Trigonometric Function) |
| 29th  |  **Trigonometry** (Domain and Range of Inverse Trigonometric Function) |
| 30th  |  **Trigonometry** (Properties of Principal Inverse Trigonometric Function) |
| 7th | 31st | **Trigonometry** (Example Discussion on Inverse Trigonometric Function ) |
| 32nd |  **Trigonometry** (Trigonometric Formulae Discussion) |
| 33rd |  **Trigonometry** (Example Discussion ) |
| 34th |  **2 – Dimensional Co-ordinate Geometry** (Define Co-ordinate of a  point on a plane in Cartesian rectangular co-ordinates) |
| 35th  |  **2-D** (Derive distance between two given points with Examples) |
| 8th | 36th |  **2-D** (Division point in the ratio m:n between two given points both  externally and internally with Examples) |
| 37th |  **2-D** (Area of the Triangle whose vertices are given with Examples) |
| 38st |  **2-D** (Define Slope of a line and angle between two lines, conditions  of perpendicularly and parallelism of two lines with Examples) |
| 39th |  **2-D** (Define Locus and Equations of Locus from the given conditions  with Examples) |
| 40th  |  **2-D** (Derive standard forms of straight lines:1. Slope Intercept Form 2. Slope point form) |
| 9th | 41st |  **2-D** (Derive standard forms of straight lines:3. Two Point Form 4. Intercept Form 5. Normal/Perpendicular form) with Examples |
| 42nd |  **2-D** (Derive standard forms of straight lines: 6. General equation of straight line 7. Transformation of general form ax+by+c=0 into Slope  intercept and normal Form) |
| 43rd |  **2-D** (Determine point of intersection of two straight lines with  Examples) |
| 44th |  **2-D** (Derive Equation of straight lines: (a) Passing through a point  and parallel toa line and perpendicular to a line with Examples) |
| 45th  |  **2-D** (Derive Equation of straight lines: (b) Derive equation of straight  lines by passing through a point of intersection of two straight  lines with Examples) |
| 10th | 46th |  **2-D** (Determine perpendicular distance from a point to a line with  Examples) |
| 47th |  **Circle** (Find equation of Circle with given centre (h, k) and radius r  with Examples) |
| 48th |  **Circle** (General equation of a Circle and determination of its centre  and radius) |
| 49th |  **Circle** (Examples Discussion on Circles) |
| 50th  |  **Circle** (Find Equation of Circle passing through three non-colinear) |
| 11th | 51st | **Circle** (Examples Discussion on Circles) |
| 52nd |  **Circle** (Find equation of a Circle with given end points of a diameter) |
| 53rd |  **Circle** (Examples Discussion on Circles) |
| 54th |  **3- Dimensional Geometry** (Introduction, Distance Formula,  Division Formula) |
| 55th  |  **3- D** (Centroid of a Triangle and Example Discussion) |
| 12th | 56th |  **3- D** (Direction Co-sines, Relation between direction co-sines) |
| 57th |  **3- D** (Direction Ratios, Projections) |
| 58th | **3- D** (Example Discussion on 3- Dimensional Geometry) |
| 59th |  **3- D** (To find Angle between two lines with Examples) |
| 60th  |  **3- D** (Conditions for Perpendicularity and Conditions for Parallelism) |
| 13th | 61st  |  **3- D** (Projection of a line segment) |
| 62nd  |  **3- D** (Example Discussion on 3- Dimensional Geometry) |
| 63rd  | **3- D** (Introduction on Plane and Discuss Theorems on plane) |
| 64th  |  **3- D** (Number of constants in the equation of plane, Equation of  plane through three non-colinear points, Intercept Form) |
| 65th  |  **3- D** (Problem Solving on 3-D) |
| 14th | 66th  |  **3- D** (Planes parallel and perpendicular to co-ordinate axes, Normal  form of the equation of a plane, Transformation of the general  equation of a plane to the normal form, Planes parallel to the  Co-ordinate planes with Examples) |
| 67th  |  **3- D** (Angle between two planes, Plane through the intersection of  two given planes, Posiyion of points with respect to a Plane,  Distance of a point from a Plane, Bisector of the angles  between two Planes) |
| 68th  | **3- D** (Example Discussion on 3- Dimensional Geometry) |
| 69th  |  **Sphere** (Introduction about Sphere) |
| 70th  |  **Sphere** (General Equation of a Sphere) |
|  15th | 71st  |  **Sphere** (Examples Discussion on Sphere) |
| 72nd  |  **Sphere** (To find the equation of the Sphere if the co-ordinates of end  point of a diameter of a Sphere are (x1,y1,z1) and (x2,y2,z2)) |
| 73rd  |  **Sphere** (Problem solving related on Sphere) |
| 74th  |  **Sphere** (To find the equation of the Sphere through four given  points (x1,y1,z1), (x2,y2,z2), (x3,y3,z3) & (x4,y4,z4)) |
| 75th  |  **Sphere** (Examples Discussion on Sphere) |