# Vivekananda Degree College
### Rajajinagar, Bangalore -55
## Department of Mathematics
**LESSON PLAN FOR THE ACADEMIC YEAR 2020-2021**

### ( Online classes from SEPT 2020 – FEB 2021)

**Program: BSc**
**Course/Paper Name**: Mathematics
**Semester**: First Semester
**Class**: 1st Year B.Sc.                                             Total Hours : 56

## THEORY

| Sl.No | Topic covered | No.of lecture hours | Methodology | Initials |
|---|---|---|---|---|
| | Algebra I –Matrix | | | |
| 1. | Introduction | 1 | Lecture + interaction | SNH |
| 2. | Elementary row and column transformations | 1 | Blackboard + Lecture + Interaction | SNH |
| 3. | Equivalent Matrices | 1 | Blackboard + Interaction | SNH |
| 4. | Elementary Matrix | 1 | Blackboard + Interaction | SNH |
| 5. | Row reduced echelon form of a matrix | 1 | Blackboard + Interaction | SNH |
| 6. | Rank of a matrix | 1 | Blackboard + Interaction | SNH |
| 7. | Some important results | 1 | Blackboard + Lecture | SNH |
| 8. | Rank of a matrix by row reduction | 1 | Blackboard + Interaction | SNH |
| 9. | Normal form | 1 | Blackboard + Interaction | SNH |
| 10. | Linear equations | 1 | Blackboard + Lecture | SNH |
| 11. | Homogeneous system of linear equations | 1 | Blackboard + Lecture | SNH |
| 12. | Non-homogeneous system of linear equations | 1 | Blackboard + Lecture | SNH |
| 13. | Condition for consistency | 1 | Blackboard + Lecture | SNH |

| | | | | |
|---|---|---|---|---|
| 14. | Solution by Gauss elimination method | 1 | Blackboard + Lecture | SNH |
| 15. | Eigen values and Eigen vectors | 1 | Blackboard + Lecture | SNH |
| 16. | Relationship between Eigen values and Eigen vectors | 1 | Blackboard + Lecture | SNH |
| 17. | Caley-Hamilton theorem | 1 | Blackboard + Lecture | SNH |
| 18. | Application Problems | 1 | Blackboard + Lecture | SNH |
| | **Calculus I -2(a) Differential calculus** | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | PL |
| 2. | Higher derivatives | 1 | Blackboard + Lecture | PL |
| 3. | Calculation of nth derivative | 1 | Blackboard + Lecture | PL |
| 4. | Leibniz's theorem | 1 | Blackboard + Lecture | PL |
| 5. | Partial Differentiation | 1 | Blackboard + Lecture | PL |
| 6. | Higher order partial derivatives | 1 | Blackboard + Lecture | PL |
| 7. | Differentiation of homogeneous function | 1 | Blackboard + Lecture | PL |
| 8. | Euler's theorem on homogeneous function | 1 | Blackboard + Lecture | PL |
| 9. | Extension of Euler's theorem | 1 | Blackboard + Lecture | PL |
| 10. | Total differential | 1 | Blackboard + Lecture | PL |
| 11. | Total derivative | 1 | Blackboard + Lecture | PL |
| 12. | Chain rule for functions of two independent variables with one independent parameter | 1 | Blackboard + Lecture + interaction | PL |
| 13. | Chain rule for functions of three independent variables with one independent parameter | 1 | Blackboard + Lecture +interaction | PL |
| 14. | Chain rule for functions of two independent variables with two independent parameter | 1 | Blackboard + Lecture +interaction | PL |

| 15. | Differentiation of implicit functions | 1 | Blackboard + Lecture | PL |
|---|---|---|---|---|
| 16. | Jacobians | 1 | Blackboard + Lecture | PL |
| 17. | Application Problems | 1 | Blackboard + Lecture | PL |
| | | | | |
| | 2(b) Integral Calculus | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | KRP |
| 2. | Reduction formulae for $\int sin^n x\, dx$ | 1 | Blackboard + Lecture | KRP |
| 3. | Reduction formulae for $\int cos^n x\, dx$ | 1 | Blackboard + Lecture | KRP |
| 4. | Reduction formulae for $\int tan^n x\, dx$ | 1 | Blackboard + Lecture | KRP |
| 5. | Reduction formulae for $\int cot^n x\, dx$ | 1 | Blackboard + Lecture | KRP |
| 6. | Reduction formulae for $\int sec^n x\, dx$ | 1 | Blackboard + Lecture | KRP |
| 7. | Reduction formulae for $\int cosec^n x\, dx$ | 1 | Blackboard + Lecture | KRP |
| 8. | Reduction formulae for $\int sin^m x cos^n x\, dx$ | 1 | Blackboard + Lecture | KRP |
| 9. | Differentiation under integral sign –Leibnitz rule | 1 | Blackboard + Lecture | KRP |
| | | | | |
| | Geometry –Analytical Geometry of three dimension | | | |
| 1. | Recapitulation | 1 | Lecture + interaction | LDN |
| 2. | Angle Between two planes | 1 | Blackboard + Lecture | LDN |
| 3. | Line of interaction of two planes | 1 | Blackboard + Lecture | LDN |
| 4. | Planes co-axal with given planes | 1 | Blackboard + Lecture | LDN |
| 5. | Planes bisecting the angle between two planes | 1 | Blackboard + Lecture | LDN |
| 6. | Angle between a line and a plane | 1 | Blackboard + Lecture | LDN |
| 7. | Co-planarity of two lines | 1 | Blackboard + | LDN |

| | | | Lecture | |
|---|---|---|---|---|
| 8. | Shortest distance between skew lines | 1 | Blackboard + Lecture | LDN |
| 9. | Sphere | 1 | Blackboard + Lecture | LDN |
| 10. | Equation of the tangent plane of the sphere | 1 | Blackboard + Lecture | LDN |
| 11. | Angle of intersection of two spheres | 1 | Blackboard + Lecture | LDN |
| 12. | Condition of orthogonality of two spheres | 1 | Blackboard + Lecture | LDN |
| 13. | Right circular cone | 1 | Blackboard + Lecture | LDN |
| 14. | Right circular cylinder | 1 | Blackboard + Lecture | LDN |
| | ASSIGNMENTS – Solving question bank and model question papers | | | |

SNH : PROF S N HONNAPPA = 18 HOURS

KRP : PROF PUSHPA K R = 09 HOURS

PL : PROF PUSHPALATHA A = 17 HOURS

LDN : DR. LATHA D N = 14 HOURS

Pushpalatha.A

# PRACTICALS

**Total hours : 42**

| Sl.No | Topic covered | No.of lecture hours | Methodology |
|---|---|---|---|
| 1. | Introduction to Scilab and commands connected with matrices. | 3 | Blackboard + Lecture + Hands on key |
| 2. | Computations with matrices | 3 | Blackboard + Lecture + Hands on key |
| 3. | Row reduced echelon form and normal form. | 3 | Blackboard + Lecture + Hands on key |
| 4. | Establishing consistency or otherwise and solving system of linear equations. | 3 | Blackboard + Lecture + Hands on key |
| 5. | Introduction to Maxima and commands for derivatives and $n_{th}$ derivatives | 3 | Blackboard + Lecture + Hands on key |
| 6. | Scilab and Maxima commands for plotting functions. | 3 | Blackboard + Lecture + Hands on key |
| 7. | $n^a$ derivative without Leibnitz rule. | 3 | Blackboard + Lecture + Hands on key |
| 8. | $n^a$ derivative with Leibnitz rule. | 3 | Blackboard + Lecture + Hands on key |
| 9. | Obtaining partial derivative of some standard functions | 3 | Blackboard + Lecture + Hands on key |
| 10. | Verification of Euler's theorem, its extension and Jacobian | 3 | Blackboard + Lecture + Hands on key |
| 11. | Maxima commands for reduction formula with or without limits | 3 | Blackboard + Lecture + Hands on key |
| 12. | Implementing vector form of line. | 3 | Blackboard + Lecture + Hands on key |
| 13. | Implementing vector form of plane | 3 | Blackboard + Lecture + Hands on key |
| 14. | REPETATION | 3 | Hands on key |

Pushpalatha .A.

# Vivekananda Degree College
### Rajajinagar, Bangalore -55
## Department of Mathematics
**LESSON PLAN FOR THE ACADEMIC YEAR 2020-2021**

**Program: BSc**
**Course/Paper Name**: Mathematic
**Semester:** Third Semester
**Class:** 3rd Year B.Sc.

Total Hours : 56

## THEORY

| Sl.No | Topic covered | No.of lecture hours | Methodology | Initials |
|---|---|---|---|---|
| | Group Theory | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | LDN |
| 2. | Integral powers of an element of group | 1 | Blackboard + Lecture | LDN |
| 3. | Order of an element of a group | 1 | Blackboard + Lecture | LDN |
| 4. | Properties of Order of an element | 1 | Blackboard + Lecture | LDN |
| 5. | Co-set decomposition of a group | 1 | Blackboard + Lecture | LDN |
| 6. | Cyclic groups | 1 | Blackboard + Lecture | LDN |
| 7. | Properties of Cyclic groups | 1 | Blackboard + Lecture | LDN |
| 8. | Index of a subgroup of groups | 1 | Blackboard + Lecture | LDN |
| 9. | Lagrange's theorem | 1 | Blackboard + Lecture | LDN |
| 10. | Consequences of Lagrange's theorem | 1 | Blackboard + Lecture | LDN |
| | | | | |
| | Sequence and series of Real numbers | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | KRP |
| 2. | Bounded sequences | 1 | Blackboard + Lecture | KRP |
| 3. | Least upper bound (supremum) and greatest lower bound (infimum) of a sequence | 1 | Blackboard + Lecture | KRP |
| 4. | Limit of a sequences | 1 | Blackboard + | KRP |

| | | | | Lecture | |
|---|---|---|---|---|---|
| | 5. | convergent, divergent and oscillatory sequences | 1 | Blackboard + Lecture | KRP |
| | 6. | Theorem of sequence | 1 | Blackboard + Lecture | KRP |
| | 7. | Algebra of sequence | 1 | Blackboard + Lecture | KRP |
| | 8. | Monotonic sequences and their properties | 1 | Blackboard + Lecture | KRP |
| | 9. | Some standard sequence | 1 | Blackboard + Lecture | KRP |
| | 10. | Cauchy's sequence | 1 | Blackboard + Lecture | KRP |
| | 11. | Application problems | 1 | Blackboard + Lecture | KRP |
| | 12. | Infinite series _introduction | 1 | Blackboard + Lecture | SNH |
| | 13. | Behavior of an infinite series | 1 | Blackboard + Lecture | SNH |
| | 14. | Series of positive terms | 1 | Blackboard + Lecture | SNH |
| | 15. | Geometric series | 1 | Blackboard + Lecture | SNH |
| | 16. | Test for convergence of series | 1 | Blackboard + Lecture | SNH |
| | 17. | comparison tests | 1 | Blackboard + Lecture | SNH |
| | 18. | The p- series or harmonic series | 1 | Blackboard + Lecture | SNH |
| | 19. | D Alembert's test | 1 | Blackboard + Lecture | SNH |
| | 20. | Raabe's test | 1 | Blackboard + Lecture | SNH |
| | 21. | Cauchy's root Test | 1 | Blackboard + Lecture | SNH |
| | 22. | Alternating series - Leibnitz test | 1 | Blackboard + Lecture | SNH |
| | 23. | Absolute and conditional convergence | 1 | Blackboard + Lecture | SNH |
| | 24. | D' Alembert test for absolute convergence | 1 | Blackboard + Lecture | SNH |
| | 25. | Summation of binomial series | 2 | Blackboard + Lecture | KRP |

| | | | | |
|---|---|---|---|---|
| 26. | Summation of exponential series | 2 | Blackboard + Lecture | KRP |
| 27. | Summation of logarithmic series | 2 | Blackboard + Lecture | KRP |
| 28. | Application problems | 2 | Blackboard + Lecture | KRP |
| | Differential Calculus | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | PL |
| 2. | Limit of a function in ε-δ form | 2 | Blackboard + Interaction | PL |
| 3. | Limit of real valued function | 1 | Blackboard + Interaction | PL |
| 4. | Left and right hand limit | 1 | Blackboard + Interaction | PL |
| 5. | Limits at infinity | 2 | Blackboard + Interaction | PL |
| 6. | Uniqueness of limit of a function | 2 | Blackboard + Interaction | PL |
| 7. | Bounds of a function | 2 | Blackboard + Interaction | PL |
| 8. | Least upper bound (supremum) and greatest lower bound (infimum) | 1 | Blackboard + Interaction | PL |
| 9. | Algebra of limits | 1 | Blackboard + Interaction | PL |
| 10. | Continuity | 1 | Blackboard + Interaction | PL |
| 11. | Discontinuity of a function | 1 | Blackboard + Interaction | PL |
| 12. | Algebra of Continuity | 1 | Blackboard + Interaction | PL |
| 13. | Theorem of Continuity | 1 | Blackboard + Interaction | PL |
| 14. | Differentiability | 1 | Blackboard + Interaction | PL |
| 15. | Mean Value Theorem | 1 | Blackboard + Interaction | PL |
| 16. | Rolle's Theorem | 1 | Blackboard + Interaction | PL |
| 17. | Geometrical interpretation of Rolle's Theorem | 1 | Blackboard + Interaction | PL |

| 18. | Lagrange's Mean Value Theorem (First Mean Value Theorem) | 1 | Blackboard + Interaction | PL |
|---|---|---|---|---|
| 19. | Cauchy's Mean Value Theorem | 1 | Blackboard + Interaction | PL |
| 20. | Taylors theorem | 1 | Blackboard + Interaction | PL |
| 21. | Problems on Taylors series expansion | 1 | Blackboard + Interaction | PL |
| 22. | Problems on McLaurin's Theorem and series expansion | 1 | Blackboard + Interaction | PL |
| 23. | Evaluation of limits by L' Hospital's rule | 1 | Blackboard + Interaction | PL |
| 24. | Type 1 Evaluation of limits of form $\frac{0}{0}$ | 1 | Blackboard + Interaction | PL |
| 25. | Type 2 Evaluation of limits of form $\frac{\infty}{\infty}$ | 1 | Blackboard + Interaction | PL |
| 26. | Type 3 Evaluation of limits of form $0 \times \infty , \infty - \infty$ | 1 | Blackboard + Interaction | PL |
| 27. | Type 4 Evaluation of limits of form $0^0, \infty^0, 1^\infty$ | 1 | Blackboard + Interaction | PL |
| | ASSIGNMENTS – Solving question bank and model question papers | | | |

SNH : PROF S N HONNAPPA = 13 HOURS

KRP : PROF PUSHPA K R = 19 HOURS

PL : PROF PUSHPALATHA A = 31 HOURS

LDN : DR. LATHA D N = 10 HOURS

Pushpalatha. A

PRINCIPAL
VIVEKANANDA DEGREE COLLEGE
BENGALURU-55

# PRACTICALS

**Total hours: 36**

| Sl.No | Topic covered | No.of lecture hours | Methodology |
|---|---|---|---|
| 1. | Examples to verify Lagrange's theorem | 3 | Blackboard + Lecture + Hands on key |
| 2. | Examples for finding left and right coset and finding the index of a group. | 3 | Blackboard + Lecture + Hands on key |
| 3. | Illustration of convergent, divergent and oscillatory sequences using Scilab/Maxima. | 3 | Blackboard + Lecture + Hands on key |
| 4. | Illustration of convergent, divergent and oscillatory series using Scilab/Maxima. | 3 | Blackboard + Lecture + Hands on key |
| 5. | Using Cauchy's criterion on the sequence of partial sums of the series to Determine convergence of a series. | 3 | Blackboard + Lecture + Hands on key |
| 6. | Testing the convergence of binomial, exponential and logarithmic series and finding the sum. | 3 | Blackboard + Lecture + Hands on key |
| 7. | Scilab/Maxima programs to illustrate continuity of a function. | 3 | Blackboard + Lecture + Hands on key |
| 8. | Scilab/Maxima programs to illustrate differentiability of a function and unequal left hand and right hand limits for discontinuous functions. | 3 | Blackboard + Lecture + Hands on key |
| 9. | Scilab/Maxima programs to verify Rolle's theorem and Lagrange's theorem. | 3 | Blackboard + Lecture + Hands on key |
| 10. | Scilab/Maxima programs to verify Cauchy's mean value theorem and finding Taylor's theorem for a given function. | 3 | Blackboard + Lecture + Hands on key |
| 11. | Evaluation of limits by L'Hospital's rule using Scilab/Maxima. | 3 | Blackboard + Lecture + Hands on key |
| 12. | REPETATION | 3 | Hands on key |

Pushpalatha.A

PRINCIPAL
VIVEKANANDA DEGREE COLLEGE
BENGALURU-55

# Vivekananda Degree College
### Rajajinagar, Bangalore -55
## Department of Mathematics
**LESSON PLAN FOR THE ACADEMIC YEAR 2020-2021**

**Program: BSc**
**Course/Paper Name**: Mathematic
**Semester:** Fifth Semester

**Class:** 5th Year B.Sc.

## Paper V
### THEORY
Total Hours : 42

| Sl.No | Topic covered | No.of lecture hours | Methodology | Initials |
|---|---|---|---|---|
| | Algebra IV Rings, Integral Domains, Fields | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | KRP |
| 2. | Rings | 1 | Blackboard+ Interaction | KRP |
| 3. | Some special types Rings | 1 | Blackboard+ Interaction | KRP |
| 4. | Elementary Properties of Rings | 1 | Blackboard+ Interaction | KRP |
| 5. | Subrings | 1 | Blackboard+ Interaction | KRP |
| 6. | Results on Subrings of a ring | 1 | Blackboard+ Interaction | KRP |
| 7. | Ideals | 1 | Blackboard+ Interaction | KRP |
| 8. | Standard properties of Ideals | 1 | Blackboard+ Interaction | KRP |
| 9. | Homomorphism of rings | 1 | Blackboard+ Interaction | KRP |
| 10. | Properties of Homomorphism | 1 | Blackboard+ Interaction | KRP |
| 11. | Isomorphism | 1 | Blackboard+ Interaction | KRP |
| 12. | Properties of Isomorphism | 1 | Blackboard+ Interaction | KRP |
| 13. | Quotient rings | 1 | Blackboard+ Interaction | KRP |
| | | | | |

| # | Topic | | Method | Faculty |
|---|---|---|---|---|
| | **CALCULUS – V Differential Calculus Of Scalar And Vector Fields** | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | SNH |
| 2. | Scalar Field | 1 | Blackboard+ Interaction | SNH |
| 3. | Gradient of a Scalar field | 1 | Blackboard+ Interaction | SNH |
| 4. | Geometrical Meaning | 1 | Blackboard+ Interaction | SNH |
| 5. | Directional derivative | 1 | Blackboard+ Interaction | SNH |
| 6. | Maximum Directional derivative | 1 | Blackboard+ Interaction | SNH |
| 7. | Angle between 2 surface | 1 | Blackboard+ Interaction | SNH |
| 8. | Divergence and Curl of vector field | 1 | Blackboard+ Interaction | SNH |
| 9. | Solenoidal and irrotational fields | 1 | Blackboard+ Interaction | SNH |
| 10. | Scalar and Vector potentials | 1 | Blackboard+ Interaction | SNH |
| 11. | Laplacian of a scalar field | 1 | Blackboard+ Interaction | SNH |
| 12. | Vector identities | 1 | Blackboard+ Interaction | SNH |
| 13. | Standard properties | 1 | Blackboard+ Interaction | SNH |
| 14. | Harmonic function | 1 | Blackboard+ Interaction | SNH |
| 15. | Application Problems | 1 | Blackboard+ Interaction | SNH |
| | | 1 | Blackboard+ Interaction | SNH |
| | **NUMERICAL METHODS – I** | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | LDN |
| 2. | Finite differences | 1 | Blackboard+ Interaction | LDN |
| 3. | Fundamental difference of finite difference | 1 | Blackboard+ Interaction | LDN |
| 4. | Backward difference operator $\nabla$ | 1 | Blackboard+ Interaction | LDN |
| 5. | Relation Between the operators | 1 | Blackboard+ Interaction | LDN |

| | | | | | |
|---|---|---|---|---|---|
| 6. | Factorial notations | 1 | Blackboard+ Interaction | | LDN |
| 7. | Separation of symbols | 1 | Blackboard+ Interaction | | LDN |
| 8. | Interpolation | 1 | Blackboard+ Interaction | | LDN |
| 9. | Interpolation with equal intervals | 1 | Blackboard+ Interaction | | LDN |
| 10. | Interpolation with unequal intervals | 1 | Blackboard+ Interaction | | LDN |
| 11. | The concept of divided difference | 1 | Blackboard+ Interaction | | LDN |
| 12. | Newton's General divided difference Formula | 1 | Blackboard+ Interaction | | LDN |
| 13. | Inverse interpolation | 1 | Blackboard+ Interaction | | LDN |
| 14. | Numerical Integration | 1 | Blackboard+ Interaction | | LDN |
| 15. | General Quadrature formula for equidistance ordinates : | 1 | Blackboard+ Interaction | | LDN |
| 16. | i.    Trapezoidal rule<br>ii.   Simpson's 1/3 rule<br>iii.  Simpson's 3/8 rule | 3 | Blackboard+ Interaction | | LDN |
| | ASSIGNMENTS – Solving question bank and model question papers | | | | |

SNH : PROF S N HONNAPPA = 15 HOURS

KRP  : PROF PUSHPA K R = 13 HOURS

LDN : DR. LATHA D N = 18 HOURS

Pushpalathe A

PRINCIPAL
VIVEKANANDA DEGREE COLLEGE
BENGALURU-55

# PRACTICALS

**Total hours : 33**

| Sl.No | Topic covered | No.of lecture hours | Methodology |
|---|---|---|---|
| 1. | Examples on different types of rings. | 3 | Blackboard + Lecture + Hands on key |
| 2. | Examples on integral domains and fields. | 3 | Blackboard + Lecture + Hands on key |
| 3. | Examples on subrings, ideals and subrings which are not ideals. | 3 | Blackboard + Lecture + Hands on key |
| 4. | Homomorphism and isomorphism of rings-illustrative examples. | 3 | Blackboard + Lecture + Hands on key |
| 5. | To demonstrate the physical interpretation of gradient, divergence and curl. | 3 | Blackboard + Lecture + Hands on key |
| 6. | Writing gradient, divergence, curl and Laplacian in cylindrical and spherical coordinates. | 3 | Blackboard + Lecture + Hands on key |
| 7. | Scilab/Maxima programs on Interpolations with equal intervals. | 3 | Blackboard + Lecture + Hands on key |
| 8. | Scilab/Maxima programs on Interpolations with unequal intervals. | 3 | Blackboard + Lecture + Hands on key |
| 9. | Scilab/Maxima programs to evaluate integrals using Simpson's $\frac{1}{3}^{rd}$ rule. | 3 | Blackboard + Lecture + Hands on key |
| 10. | Scilab/Maxima programs to evaluate integrals using Simpson's $\frac{3}{8}^{th}$ rule. | 3 | Blackboard + Lecture + Hands on key |
| 11. | REPETATION | 3 | Hands on key |

Pushpalatha·A

# Paper VI
## THEORY

Total Hours : 42

| Sl.No | Topic covered | No.of lecture hours | Methodology | Initials |
|-------|---------------|---------------------|-------------|----------|
| | **MATHEMATICAL METHODS – II Calculus Of Variation** | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | SNH |
| 2. | Functional | 1 | Blackboard+ Interaction | SNH |
| 3. | Variation of a function $f = f(x, y, y')$ | 1 | Blackboard+ Interaction | SNH |
| 4. | Properties | 1 | Blackboard+ Interaction | SNH |
| 5. | Euler's equation | 1 | Blackboard+ Interaction | SNH |
| 6. | Particular forms of Euler's equation | 1 | Blackboard+ Interaction | SNH |
| 7. | Application of Calculus of variation | 1 | Blackboard+ Interaction | SNH |
| 8. | Isoperimetric problems | 1 | Blackboard+ Interaction | SNH |
| | | | | |
| | **CALCULUS – VI a). Line And Multiple Integrals** | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | PL |
| 2. | Line integral over plane curves | 1 | Blackboard+ Interaction | PL |
| 3. | Basic properties of line integrals | 1 | Blackboard+ Interaction | PL |
| 4. | Line integral over space curves | 1 | Blackboard+ Interaction | PL |
| 5. | Independent of paths | 1 | Blackboard+ Interaction | PL |
| 6. | Definition of double integral | 1 | Blackboard+ Interaction | PL |
| 7. | Evaluation of double integral | 1 | Blackboard+ Interaction | PL |
| 8. | Change of order of integration | 1 | Blackboard+ Interaction | PL |
| 9. | Change of variables | 1 | Blackboard+ Interaction | PL |

| | | | | PL |
|---|---|---|---|---|
| 10. | Double integral in polar form | 1 | Blackboard+ Interaction | PL |
| 11. | Application of double integral to find Area and Volume | 1 | Blackboard+ Interaction | PL |
| 12. | Computation of plane areas | 1 | Blackboard+ Interaction | PL |
| 13. | Area in Cartesian form | 1 | Blackboard+ Interaction | PL |
| 14. | Area in Polar form | 1 | Blackboard+ Interaction | PL |
| 15. | Computation of surface areas | 1 | Blackboard+ Interaction | PL |
| 16. | Volume underneath a surface | 1 | Blackboard+ Interaction | PL |
| 17. | Volume of revolution using double integrals | 1 | Blackboard+ Interaction | PL |
| 18. | Triple integral | 1 | Blackboard+ Interaction | PL |
| 19. | Change of variables in Triple integral | 1 | Blackboard+ Interaction | PL |
| 20. | Triple integral in cylindrical Polar form | 1 | Blackboard+ Interaction | PL |
| 21. | Triple integral in spherical Polar form | 1 | Blackboard+ Interaction | PL |
| 22. | Computation of volume by triple integral | 1 | Blackboard+ Interaction | PL |
| | | | | |
| | **b) Integral Theorems** | | | |
| 1. | Introduction and Recapitulation | 1 | Lecture + interaction | KRP |
| 2. | Green's theorem | 1 | Blackboard+ Interaction | KRP |
| 3. | Proof of Green's theorem | 1 | Blackboard+ Interaction | KRP |
| 4. | Extension of Green's theorem | 1 | Blackboard+ Interaction | KRP |
| 5. | The Gauss Divergence theorem | 2 | Blackboard+ Interaction | KRP |
| 6. | Stokes'theorem | 2 | Blackboard+ Interaction | KRP |
| | ASSIGNMENTS – Solving question bank and model question papers | | | |

SNH : PROF S N HONNAPPA = 08 HOURS

KRP  : PROF PUSHPA K R = 08 HOURS

PL : PROF PUSHPALATHA A = 22 HOURS

Pushpalatha·A

PRINCIPAL
VIVEKANANDA DEGREE COLLEGE
BENGALURU-55