Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Home Assignment (18-19)

Class :- B.Sc. III

Subject :- Partial differential equation

1) Explain Compatible system of first order equation

2) Explain Charpits method for solving the PDE $f(x, y, z, p, q) = 0$ where x and y are independent variables and $p = \frac{\partial z}{\partial x}$, $q = \frac{\partial z}{\partial y}$

3) Explain standard form II (Clairout Equation)

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Home Assignment (18-19)

Class :- B.Sc. I

Subject :- Algebra

1) Solve $x - y + z = 0$

$x + 2y - z = 0$

$2x + y + 3z = 0$

2) Describe Non homogenous system of linear equations .

3) Test for considtancy

$2x + 6y = -11$

$6x + 20y - 6z = 3$

$6y - 18z = -1$

4) Define eigen values , eigen vector & trace of matrix .

5) Is an $\begin{bmatrix} 1 \\ 4 \end{bmatrix}$ eigenvector of $\begin{bmatrix} -3 & 1 \\ -3 & 8 \end{bmatrix}$?

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Home Assignment (18-19)

Class :- B.Sc. II

Subject :- Laplace transform

1) State and prove Initial Value Theorem

2) If $F(t)$ is a function of class A and if $L\{F(t)\} = f(p)$ then

   $L\{t^n F(t)\} = (-1)^n \frac{d^n}{dp^n} f(p)$ where $n = 1,2,3$

3) State and prove Periodic Functions Fundamental theorem

4) Define Inverse a) Laplace transform
   b) Null transform

5) $L^{-1}\left\{\frac{p}{p+2} + \frac{6p}{p^2-16} + \frac{3}{p-3}\right\} = ?$

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics. (15 19)

Home Assignment. **Class:** T. Y BSc

Subject: Metric Spaces. **Paper No** -XIII.

1) State and Prove Schwarz inequality.

2) State and Prove Makowski Inequality.

3) Using ε , δ definition prove that $\lim_{x \to 1} \frac{x^2 - 1}{x - 1} = 2$

Subject: Numerical Analysis. **Paper No** -XIV

1) State and prove Newtons forward Interpolation formula.

2)State and Prove Lagranges Interpolation formula.

3) State and Prove Simpsond $\left(\frac{3}{8}\right)^{th}$ rule.

Subject: Graph Theory **Paper No** –XV

1) Prove that in a nondirected graph, the total number of odd degree vertices is even.

2)A simple graph with n vertices and k components can not have more than $\frac{(n-k)(n-k+1)}{2}$ edges.

3)The edge connectivity of a graph G cannot exceed the minimum degree of a vertex in G i.e., $\lambda(G) \leq \delta(G)$

Subject: Integral Calculus. **Paper No** – XVI.

1) State and Prove Abel test.

2)State and Prove Cauchy test.

3)State and Prove Dirichlet's test.

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MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics. (19-20)

Home Assignment. Class: F.Y. BSc

Subject: Geometry Paper No -III.

1)Find the equation of plane in Normal form.

2) Find the equation of plane in Intercept form.

3) Find the equation of plane in Three-point form.

Home Assignment. **Class:** F.Y. BSc

Subject: Differential Equation. **Paper No** -IV.

1) Solve $\tan y dx + \cot y dy = 0$ by Variable separable form.

2) Solve $\frac{dy}{dx} = \sin x$ by using equations reducible to variable separable form.

3) Solve $x\frac{dy}{dx} = y[\log y - \log x + 1]$ by using method of solution of homogeneous equations.

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics. (19-20)

Home Assignment. **Class:** S. Y BSc

Subject: Differential Equation. **Paper No** -VII.

1) Solve $p(p+x)=y(x+y)$ by Variable separable form.

2) Solve $p=\tan\left(x-\frac{p}{1+p^2}\right)$ by using solvable for x method.

3) Solve $xy(y-px)=x+py$ by using differential equation reducible to Clairaut's equation.

Subject: Abstract Algebra I **Paper No** –VIII

1) In a group G, G is abelian then $(ab)^n=a^nb^n \ \forall \ \ a,b\in G$ for any integer n.

2)Prove that the order of symmetric group S_n is $n!$

3)State and prove one step subgroup test.

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics.

Home Assignment. (19-20)

Class: T. Y Bsc

Subject: Real Analysis.

Name of Assistant Professor: Sabale Nanasaheb Vasant

1)Prove that every convergent sequence is bounded.

2)Prove that the set of limit points of a bounded sequence has the greatest and the least members

3)State and prove Bolzano-Weierstrass theorem

4) Prove that a necessary and sufficient condition for the convergence of a monotonic sequence is that it is bounded.

5) State and prove Cauchy's first theorem on limits

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics. (19-20)

Home Assignment. **Class:** T. Y BSc

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Home Assignment (20-21)

Class :- B.Sc. III

Subject :- Partial differential equation

1) Explain Compatible system of first order equation

2) Explain Charpits method for solving the PDE $f(x, y, z, p, q) = 0$ where x and y are independent variables and $p = \frac{\partial z}{\partial x}$, $q = \frac{\partial z}{\partial y}$

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Home Assignment (20-21)

Class :- B.Sc. I

Subject :- Calculus

Que . Write and describe three Reduction Formulae

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics.

Home Assignment. (20-21)

Class: S. Y BSc

Subject: Differential Calculus.

1)Derive formula to calculate the angle between radius vector and tangent.

2)Find formula to calculate length of perpendicular from pole to the tangent.

3) Derive formula to calculate length of tangent, length of normal and length of subnormal at any point on the curve.

4)Derive formula to calculate the pedal equation of the cure in Cartesian form.

5) Derive formula to calculate length of polar sub-tangent and length of polar sun-normal. And solve following examples.

i) $\frac{1}{r} = 1 + e\cos\theta$

ii) $\frac{2a}{r} = 1 - \cos\theta$

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SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics (21-22)

Home Assignment

Class :- B.Sc. I

Subject :- Algebra

1) Solve $x - y + z = 0$

$x + 2y - z = 0$

$2x + y + 3z = 0$

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3) Test for considtancy

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4) Define eigen values , eigen vector & trace of matrix .

5) Is an $\begin{bmatrix} 1 \\ 4 \end{bmatrix}$ eigenvector of $\begin{bmatrix} -3 & 1 \\ -3 & 8 \end{bmatrix}$?

Dept. of Mathematics
S.S.M. Barshi.

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics (21.22)

Home Assignment

Class :- B.Sc. II

Subject :- Laplace transform

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2) If $F(t)$ is a function of class A and if $L\{F(t)\} = f(p)$ then

$L\{t^n F(t)\} = (-1)^n \frac{d^n}{dp^n} f(p)$ where $n = 1,2,3$

3) State and prove Periodic Functions Fundamental theorem

4) Define Inverse a) Laplace transform
   b) Null transform

5) $L^{-1}\left\{\frac{p}{p+2} + \frac{6p}{p^2-16} + \frac{3}{p-3}\right\} = ?$

Dept. of Mathematics
S.S.M. Barshi

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics.

Home Assignment. (21-22)

Class: T. Y Bsc

Subject: Complex Analysis.

1)State and prove the necessary and sufficient condition for f(z) to be analytic.

2)Prove that 'The real and imaginary parts of an analytic function satisfy Laplace's equation'.

3)Construct an analytic function for the following function

i) $v = 6xy - 5x$

ii) $u = x^2 - y^2 - 2xy - 2x + 3y$

4) Find the real part whose imaginary part is:

(a) $x^2 - y^2 + 2y$

(b) $e^{-2y}\cos(x^2 - y^2)$

5) Prove that "let $f(z)$ be analytic within on a closed contour C, then $\int_C f(z)dz = 0$

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics. (22-23)

Home Assignment. **Class:** F.Y. BSc

Subject: Geometry **Paper No -III.**

1)Find the equation of plane in Normal form.

2) Find the equation of plane in Intercept form.

3) Find the equation of plane in Three-point form.

Home Assignment. **Class:** F.Y. BSc

Subject: Differential Equation. **Paper No -IV.**

1) Solve $\tan y dx + \cot y dy = 0$ by Variable separable form.

2) Solve $\frac{dy}{dx} = \sin x$ by using equations reducible to variable separable form.

3) Solve $x\frac{dy}{dx} = y[\log y - \log x + 1]$ by using method of solution of homogeneous equations.

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Shri Shivaji Mahavidyalaya Barshi

Department of mathematics. (22-23)

Home Assignment. **Class:** S. Y BSc

Subject: Differential Equation. **Paper No** -VII.

1) Solve $p(p+x) = y(x+y)$ by Variable separable form.

2) Solve $p = \tan\left(x \frac{p}{1+p^2}\right)$ by using solvable for x method.

3) **Solve** $xy(y-px) = x+py$ by using differential equation reducible to Clairaut's equation.

Subject: Abstract Algebra I **Paper No** –VIII

1) In a group G, G is abelian then $(ab)^n = a^n b^n \forall\ a, b \in G$ for any integer n.

2)Prove that the order of symmetric group S_n is $n!$

3)State and prove one step subgroup test.

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Dept. of Mathematics
S.S.M. Barshi.

(22-23)

Shri Shivaji Mahavidyalaya Barshi

Department of mathematics.

Home Assignment.

Class: T. Y Bsc

Subject: Real Analysis.

Name of Assistant Professor: Sabale Nanasaheb Vasant

1)Prove that every convergent sequence is bounded.

2)Prove that the set of limit points of a bounded sequence has the greatest and the least members

3)State and prove Bolzano-Weierstrass theorem

4) Prove that a necessary and sufficient condition for the convergence of a monotonic sequence is that it is bounded.

5) State and prove Cauchy's first theorem on limits

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Dept. of Mathematics
S.S.M. Barshi.

B. Sc. 2 (18-19): Internal Exam

B. Sc. I Sem. II- Differential Equations Test

Department of Mathematics
B.Sc. I Sem. II Test
Paper: Differential Equations
Date: 17/07/2021
Time: 3.05 to 5.05 pm

The equation $\left(y + x\sin\frac{y}{x}\right)dx - x\,dy = 0$ is ..... type.

(a) variables separable (b) non-homogeneous
(c) linear (d) homogeneous

The differential equation $(x+y+5)dy+(x-y+1)dx=0$ is ..... type.

(a) variables separable (b) homogeneous
(c) exact (d) reducible to homogeneous

The expression $x^3\left(1+\frac{y}{x}+\frac{y^2}{x^2}+\frac{y^3}{x^3}\right)$ is homogeneous of degree .....

(a) 1 (b) 2 (c) 3 (d) 0

The equation $\frac{dy}{dx} = e^{x+y} + x^2e^y$ is .....

(a) homogeneous (b) non-homogeneous
(c) variables separable (d) exact

A differential equation $\frac{dy}{dx} = \frac{f(x,y)}{g(x,y)}$ is said to be homogeneous if the degree of every term in $f(x,y)$ and $g(x,y)$ is .....

(a) different (b) one
(c) same (d) finite

The general solution of $\frac{d^2y}{dx^2} + 5\frac{dy}{dx} + 4y = 0$ is .....

(a) $y = c_1e^{-x} + c_2e^{4x}$ (b) $y = c_1e^{-x} + c_2e^{-4x}$
(c) $y = c_1e^{x} + c_2e^{4x}$ (d) $y = c_1e^{x} + c_2e^{-4x}$

The particular solution of $x\,dy + y\,dx = 0$ when $x = y = 1$ is .....

(a) $x+y=2$ (b) $x^2+y^2=1$
(c) $xy=1$ (d) $xy=2$

The particular solution of $\frac{dy}{dx} = 5^{x+y}$ is .....

(a) $5^x + 5^y = 2$ (b) $5^x + 5^{-y} = 2$
(c) $5^{-x} + 5^{-y} = 2$ (d) $5^{-x} + 5^y = 2$

The differential equation $(2x-3y+1)dx+(3x+4y-1)dy=0$ is of the form.....

(a) non-homogeneous (b) homogeneous
(c) variables separable (d) exact

The differential equation $\frac{dy}{dx} = \frac{1}{1+x+y+xy}$ is ..... type.

(a) homogeneous (b) exact
(c) linear (d) variables separable

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Differential Equations, BSC

$P\frac{d^2y}{dx^2} + Q\frac{dy}{dx} + Qy = 0$ is an associated equation then which of the following is true ?

(a) If $1 - P + Q = 0$ then $y = e^{-x}$ is a part of C.F.

(b) If $1 - P + Q = 0$ then $y = e^{x}$ is a part of C.F.

(c) If $1 - P + Q = 0$ then $y = x$ is a part of C.F.

(d) If $1 - P + Q = 0$ then $y = \frac{1}{x}$ is a part of C.F.

The solution of the equation $y = px + \frac{a}{p}$ is .....

(a) $y = cx$ (b) $y = cx + \frac{a}{c}$

(c) $y = cx - ac$ (d) none of these

Solution of the equation $p^2 - 7p + 12 = 0$ is .....

(a) $y = 4x + c$ (b) $y = 4x + c$

(c) $(y - 4x - c)(y - 3x - c)$ (d) none of these

$(1 - x^2)\frac{d^2y}{dx^2} + x\frac{dy}{dx} - y = x(1 - x^2)$ then ..... is a part of C.F.

(a) $y = x$

(b) $y = x^2$

(c) $y = e^x$

(d) none of these

$x\frac{d^2y}{dx^2} - 2\tan x\frac{dy}{dx} + 3y = 2\sec x$ then ..... is a part of C.F.

(a) $y = \cos x$ (b) $y = e^x$

(c) $y = \sin x$ (d) $y = x^m$

$P\frac{d^2y}{dx^2} + P\frac{dy}{dx} + Qy = 0$ is an associated equation, then which of the following is true ?

(a) If $1 - P\tan x - Q = 0$ then $y = \cos x$ is a part of C.F.

(b) If $1 + P\tan x - Q = 0$ then $y = \sin x$ is a part of C.F.

(c) If $P + Qx = 0$ then $y = x$ is a part of C.F.

(d) None of the these

General solution of the differential equation $\sqrt{y - px} = p$ is .....

(a) $y = cx + c$ (b) $y = x + c^2$

(c) $y = cx + c^2$ (d) none of these

The differential equation of the form $y^2 = px + f\left(\frac{p}{x}\right)$ reduces to Clairaut's form by substitution.

(a) $x^2 = u,\ y^2 = v$ (b) $x = u,\ y = v$

(c) $x^2 = v^2,\ y^2 = u^2$ (d) none of these

The known solution of the equation

$$x\frac{d^2y}{dx^2} - (2x - 1)\frac{dy}{dx} + (x - 1)y = 0 \text{ is .....}$$

(a) $y = e^{-x}$ (b) $y = e^{x}$

(c) $y = x$ (d) $y = x^{-1}$

The differential equation $p^4 - 2xyp + 8x^2 = 0$ is of the type

(a) Solvable for x (b) Solvable for y

(c) Solvable for p (d) None of these

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B.Sc. III (18-19) Internal Exam

B.Sc. III Mathematics

Linear Transformation and Inner Product Space 20 marks

Let $T : R^3 \to R^2$ and $U : R^2 \to R^3$ be linear transformations. Then UT is

(a) identity (b) invertible

(c) not invertible (d) none of these

T is non-singular if

(a) Rank T = {0} (b) N(T) = {0}

(c) dim (V) = 0 (d) None of these

If A and B are square matrices of the same order, and tr means trace then

(a) tr(AB) = tr(A) · tr(B) (b) tr(AB) = tr(BA)

(c) tr(AB) = tr(A) + tr(B) (d) none of these

Norm of inner product space $||u|| =$

(a) $\sqrt{\langle u, u \rangle}$ (b) $\langle u, u \rangle$ (c) $\langle u, u \rangle^2$ (d) none of these

In an inner product space $\langle u, v \rangle = \overline{v}$

(a) $\overline{\langle u, v \rangle}$ (b) $\overline{\langle v, u \rangle}$ (c) $\langle \overline{u}, v \rangle$ (d) $\langle u, \overline{v} \rangle$

Let T : U → V be a linear map on vector spaces U and V over T. Then rank (T) + nullity (T) = ...

(a) dim U (b) dim V

(c) dim (U ∩ V) (d) dim (U ∪ V)

Let T : V(R) → V_2(R) be defined such that T(a + ib) = (a, b)

(a) T is one-to-one only (b) T is onto only

(c) T is one-to-one and onto (d) none of these

Vector space V is an inner product space iff u ∈ V

(a) $(u, u) = 0 \nRightarrow u = 0$ (b) $(u, v) \geq 0 \Rightarrow u = v$

(c) $(u, u) = 0 \Leftrightarrow u = 0$ (d) none of these

In an inner product space.

(a) $||u + v|| + ||u - v||^2 = ||u||^2 + ||v||^2$

(b) $||u + v||^2 + ||u - v||^2 = 2(||u||^2 + ||v||^2)$

(c) $||u + v||^2 + ||u - v||^2 = 2||u||\,||v||$

(d) none of these

In an inner product space.

(a) $||u + v|| = ||u|| + ||v||$ (b) $||u + v|| \geq ||u|| + ||v||$

(c) $||u + v|| \leq ||u|| + ||v||$ (d) none of these

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B. Sc. III

(19-20)

Internal Exam

B. Sc. III Mathematics

Algebra I 40 marks

Empty set ϕ is

(a) linearly dependent (b) non-linear independent

(c) linearly independent (d) non-linear dependent

If W is a subspace of vector space V(F), then (V/W) is

(a) quotient space (b) unitary space

(c) whole space (d) none of these

Any two vectors u and v are linearly dependent if one of them is ..... multiple

(a) scalar (b) vector

(c) even (d) none of these

Let $T : V(R) \to V_2(R)$ be defined such that $T(a + ib) = (a, b)$

(a) T is one-to-one only (b) T is onto only

(c) T is one-to-one and onto (d) none of these

If A and B are square matrices of the same order, and tr means trace then

(a) $tr(AB) = tr(A)\ tr(B)$ (b) $tr(AB) = tr(BA)$

(c) $tr(AB) = tr(A) + tr(B)$ (d) none of these

For a ring R of real numbers, if $(\mathbb{Z}, +, \cdot)$ and $(Q, +, \cdot)$ are subrings then

(a) Z is ideal Q is not an ideal (b) Q is ideal but Z is not an ideal

(c) both Z and Q are ideals (d) both Z and Q are not ideals

If V is a set of linear independent vectors, then

(a) $0 \in V$ (b) $1 \in V$

(c) $0 \notin V$ (d) $1 \notin V$

Every field in vector space over

(a) group (b) ring

(c) field itself (d) none of these

If W is a subspace of vector space V(F) then dim (V/W) =

(a) dim V + dim W (b) dm $(V \cap W)$

(c) dim V – dim W (d) none of these

Let $T : U \to V$ be a linear map on vector spaces U and V over T. Then rank (T) + nullity (T) = ...

(a) dim U (b) dim V

(c) dim $(U \cap V)$ (d) dim $(U \cup V)$

Let $T : R^3 \to R^2$ and $U : R^2 \to R^3$ be linear transformations. Then UT is

(a) identity (b) invertible

(c) not invertible (d) none of these

T is non-singular if

(a) Rank T = {0} (b) N(T) = {0}

(c) dim (V) = 0 (d) None of these

Vector space has ..... binary operation.

(a) one (b) two

(c) three (d) none of these

Vector space is defined over an algebraic structure

(a) Group (b) Field

(c) Ring (d) None of these

A superset of linear dependent set of vectors is

(a) may be linear independent (b) linear independent

(c) linear dependent (d) none of these

A subset of linear independent vectors is

(a) linear dependent (b) linear independent

(c) may be dependent (d) none of these

A superset of linear dependent vectors is

(a) linear dependent (b) linear independent

(c) may be linear independent (d) none of these

An element x in a ring R is idempotent if for n, $k \in Z, x \in R$

(a) $x^n = 0$ (b) $x^2 = x$

(c) $x^n = k$ (d) none of these

Characteristic of an integral domain is

(a) 0 (b) 2

(c) 12 (d) none of these

An ideal is

(a) both left and right ideal (b) left but not right ideal

(c) right but not left ideal (d) none of these

$V \times \{0\}$ is a isomorphic to

(a) {0} (b) V

(c) $V \times V$ (d) none of these

In the ring $(R, \oplus_{10}, \otimes_{10})$ where R = {0, 2, 4, 6, 8} multiplicative identity is

(a) 2 (b) 4

(c) 8 (d) 6

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B.Sc. II (19-20) Internal Exam

B.Sc. II Mathematics

Differential Calculus 35 marks

The necessary condition for a function $f(x)$ to have a maxima at $x = c$ is that ...
(a) $f'(c) = 0$ (b) $f'(c) > 0$
(c) $f(c) = 0$ (d) none of these

A function $f(x,y)$ is maximum at the point (a,b) if ...
(a) $At^2 > 0$ and $A > 0$ (b) $At^2 > 0$ $A < 0$
(c) $At^2 < 0$ and $A > 0$ (d) none

If $u = x + y$, $v = x - y$ & $z = uv$ then $\frac{\partial(u,v)}{\partial(x,y)} =$
(a) $x - y$ (b) $y - x$
(c) $\frac{1}{x+y}$ (d) none of these

The angle of intersection of two curves is defined as the angle between their ....
(a) normals (b) radius vectors
(c) tangents (d) none of these

Angle ϕ between tangent & radius vector is given by...
(a) $\tan\phi = \frac{1}{r}\frac{d\phi}{dr}$ (b) $\tan\phi = \frac{1}{r}\frac{dr}{d\theta}$
(c) $\tan\phi = r\frac{dr}{d\theta}$ (d) $\tan\phi = r\frac{d\phi}{dr}$

A function $f(x)$ has minimum value at $x = c$ if ...
(a) $f'(c) = 0$ and $f''(c) > 0$ (b) $f'(c) = 0$ and $f''(c) < 0$
(c) $f'(c) = 0$ and $f''(c) \neq 0$ (d) none of these

A function $f(x)$ has maximum value at $x = c$ if ...
(a) $f(c) = 0$ and $f'(c) > 0$ (b) $f'(c) = 0$ and $f''(c) < 0$
(c) $f'(c) = 0$ and $f''(c) = 0$ (d) none of these

A function $f(x,y)$ is maximum at point (a,b) if ...
(a) $At^2 > 0$ and $A > 0$ (b) $At^2 > 0$ and $A < 0$
(c) $At^2 < 0$ and $A > 0$ (d) none

Whic of the following formula is incorrect?
(a) $\frac{dx}{ds} = \sin\psi$ (b) $\frac{dy}{ds} = \sin\psi$
(c) $\frac{dx}{ds} = \cos\psi$ (d) $\frac{dy}{dx} = \tan\psi$

Polar Sub-normal equal to
(a) $\frac{dr}{d\theta}$ (b) $\frac{d\theta}{dr}$ (c) $r\frac{d\theta}{dr}$ (d) $r\frac{dr}{d\theta}$

The polar sub-tangents equal to ...
(a) $d\theta/dr$ (b) $r\, d\theta/dr$
(c) $r^2\, d\theta/dr$ (d) $\frac{1}{r}\, d\theta/dr$

The maximum value of $f(x) = (x+1)(x+4)(x-1)(x-4)$ is ...
(a) 9 (b) -9
(c) $-\frac{1}{9}$ (d) none of these

$\sin x(1+\cos x)$ is maximum at ...
(a) $x = \frac{\pi}{3}$ (b) $x = \pi$
(c) $x = \frac{\pi}{2}$ (d) none of these

The maximum value of $\sin x + \cos x$ is ...
(a) 2 (b) $\sqrt{2}$
(c) 1 (d) none of these

Angle of intersection of curves $r = a(1+\cos\theta)$, $r = b(1-\cos\theta)$ is
(a) π (b) $\pi/4$ (c) 0 (d) $\pi/2$

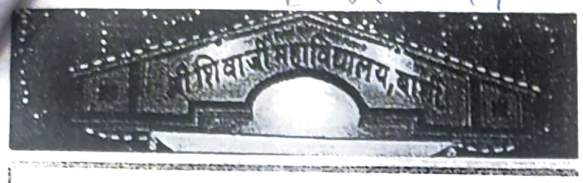
Polar Sub-tangent for the curve $r = a\theta$ is
(a) $\frac{r^2}{a}$ (b) a (c) $\frac{a}{r^2}$ (d) $\frac{1}{a}$

The intrinsic formula for radius of curvature is
(a) $\rho = \frac{dy}{dx}$ (b) $\rho = \frac{ds}{d\psi}$ (c) $\rho = \frac{1}{s}\frac{ds}{d\psi}$ (d) none

Dept. of Mathematics
S.S.M. Barshi.

B. Sc. I Sem. II NTL 19-20

Internal Exam



B.Sc. I Sem. II NTL

Department of Mathematics
B.Sc. I Sem.
NTL
Date: 24/07/2021
Time: 3.00 to 5.00 pm

The equation $ax^2+by^2+cz^2+2ux+2vy+2wz+d=0$ represents a sphere if .....

(a) $a=b=c$ (b) $a\neq b\neq c$ (c) $a=b\neq c$ (d) $a\neq b=c$

The centre of the sphere which passes through $(a, 0, 0)$, $(0, b, 0)$, $(0, 0, c)$ and $(0, 0, 0)$ is .....

(a) $\left(\frac{a}{2},0,0\right)$ (b) $\left(0,\frac{b}{2},0\right)$ (c) $\left(0,0,\frac{c}{2}\right)$ (d) $\left(\frac{a}{2},\frac{b}{2},\frac{c}{2}\right)$

The two equations $x^2+y^2+z^2+2ux+2vy+2wz+d=0$ and $lx+my+nz=p$ taken together represent a .....

(a) sphere (b) plane (c) pair of planes (d) circle

If by rotation of axes through an angle θ the expression $3x^2+2xy+3y^2-18x-22y+50=0$ does not contain cross product term xy then θ = ...

(a) $\frac{\pi}{3}$ (b) $\frac{\pi}{6}$ (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{2}$

The equation of the sphere through the origin and making intercepts a, b, c on coordinate axes is

(a) $x^2+y^2+z^2-ax-by-cz=0$

(b) $x^2+y^2+z^2+ax+by+cz=0$

(c) $x^2+y^2+z^2-2ax-2by-2cz=0$

(d) $x^2+y^2+z^2=a-b-c$

The polar coordinates of point are $\left(6,\frac{\pi}{6}\right)$ then its cartesian coordinates are .....

(a) $\left(6,\frac{\sqrt{3}}{2}\right)$ (b) $\left(6,\frac{1}{2}\right)$ (c) $(3\sqrt{2},3)$ (d) $(3,3\sqrt{3})$

The point of contact of the spheres $x^2+y^2+z^2+2x-4y-4z-7=0$, $x^2+y^2+z^2+2x-4y-16z+65=0$ is .....

(a) $(1,2,6)$ (b) $(1,2,-6)$ (c) $(1,-2,6)$ (d) $(-1,2,6)$

If by rotation of axes through an angle θ, the expression $3x^2+2xy+3y^2-18x-22y+55=0$ does not contain the cross-product term xy then θ = ...

(a) $\frac{\pi}{3}$ (b) $\frac{\pi}{6}$ (c) $\frac{\pi}{4}$ (d) $\frac{\pi}{2}$

$r=4\sin\theta$ is the polar equation of the curve then its cartesian equation is .....

(a) $x^2+y^2-4y=0$ (b) $x^2+y^2-4x=0$

(c) $x^2+y^2=4$ (d) $x^2+y^2-xy=0$

The polar coordinates $(5, 30°)$ then cartesian coordinates are .....

(a) $\left(\frac{5\sqrt{3}}{2},\frac{5}{2}\right)$ (b) $\left(\frac{\sqrt{3}}{2},\frac{5}{2}\right)$ (c) $\left(\frac{1}{2},\frac{5}{2}\right)$ (d) $\left(-\frac{\sqrt{3}}{2},-\frac{5}{2}\right)$

Centre of the sphere $x^2+y^2+z^2+6x+4y+8z+25=0$.

(a) $(3,2,4)$ (b) $(-3,-2,-4)$

(c) $(-3,2,-4)$ (d) $(3,-2,4)$

The radius of the sphere $2\left(x^2+y^2+z^2\right)+2x-3y+2z-1=0$.

(a) $\frac{4}{5}$ (b) $\frac{3}{4}$ (c) $\frac{5}{4}$ (d) $\frac{2}{5}$

The two spheres $x^2+y^2+z^2+2ux+2vy+2wz+d=0$ and $x^2+y^2+z^2+2u'x+2v'y+2w'z+d'=0$ are orthogonal if

(a) $uu'+vv'+ww'=d+d'$

(b) $uu'+vv'+ww'=2(d+d')$

(c) $2(uu'+vv'+ww')=d+d'$

(d) None of these

Centre of sphere $x^2+y^2+z^2+6x+4y+4z+16=0$ will be .....

(a) $(-3,-2,-2)$ (b) $(3,2,2)$ (c) $(3,-2,-2)$ (d) $(1,2,3)$

The polar equation of $x-y=3$ is .....

(a) $r(\cos\theta+\sin\theta)=3$ (b) $r(\cos\theta-\sin\theta)=3$

(c) $\cos\theta+\sin\theta=3$ (d) $r\left(\cos^2\theta-\sin^2\theta\right)=3$

The equation $x^2+2xy+y^2-2x-1=0$ represents .....

(a) a circle (b) an allipse (c) parabola (d) hyperbola

The equation $8x^2+5y^2-4xy+4x-10y-31=0$ represents .....

(a) Straight line (b) Ellipse (c) Parabola (d) Hyperbola

The polar form of cartesian equation $x^2+y^2=2ax$ is .....

(a) $r=3a\cos\theta$ (b) $r=2a\cos\theta$ (c) $r=a\sin\theta$ (d) $r=a\cos\theta$

The polar equation of $xy=2$ is .....

(a) $r=\cos\theta$ (b) $r=\sin\theta$

(c) $r=\sin 2\theta$ (d) $r^2\sin 2\theta=4$

The two equations $x^2+y^2+z^2+2ux+2vy+2wz+d=0$ and $lx+my+nz=p$ taken together represent a

(a) circle (b) sphere (c) plane (d) line

Dept. of Mathematics
S.S.M. Barshi.

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

B.Sc. I (19-20) Internal Exam

B.Sc. I Sem. II-Geometry Test

Department of Mathematics
B.Sc. I Sem. II Test
Paper: Geometry
Date: 10/07/2021
Time: 4.00 to 5.00 pm

Equation of a plane parallel to z-axis is

(a) $ax + by + cz + d = 0$ (b) $ax + by + d = 0$

(c) $by + cz + d = 0$ (d) $ax + cz + d = 0$

Angle between two planes $2x - y + z = 6$ and $x + y + 2z = 7$ is

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$

(c) $\frac{\pi}{3}$ (d) $\frac{\pi}{5}$

The centroid of the triangle lies in the plane $ax + by + cz = 1$ is

(a) $\left(\frac{a}{3}, \frac{b}{3}, \frac{c}{3}\right)$ (b) $\left(\frac{1}{3a}, \frac{1}{3b}, \frac{1}{3c}\right)$

(c) (3a, 3b, 3c) (d) $\left(\frac{3}{a}, \frac{3}{b}, \frac{3}{c}\right)$

The number of arbitrary constants in the equation

$Ax + By + Cz + D = 0$ is

(a) 1 (b) 2

(c) 3 (d) 4

The distance between the parallel planes $A_1x + B_1y + C_1z + D_1 = 0$ and $A_1x + B_1y + C_1z + D_1' = 0$ is

(a) $\frac{|D_1 - D_1'|}{\sqrt{A_1^2 + B_1^2 + C_1^2}}$ (b) $\frac{|D_1 + D_1'|}{\sqrt{A_1^2 + B_1^2 + C_1^2}}$

Two plane $A_1x + B_1y + C_1z + D_1 = 0$ and $A_2x + B_2y + C_2z + D_2 = 0$ are parallel if

(a) $A_1A_2 + B_1B_2 + C_1C_2 = 0$ (b) $\frac{A_1}{A_2} + \frac{B_1}{B_2} + \frac{C_1}{C_2} = 0$

(c) $\frac{A_1}{A_2} = \frac{B_1}{B_2} = \frac{C_1}{C_2}$ (d) None of these

Equation of the plane through the intersection of two planes $P_1 = 0$ and $P_2 = 0$ is

(a) $P_1P_2 = 0$ (b) $P_1 + kP_2 = 0$

(c) $P_1 = 0 = P_2$ (d) None of these

The length of the perpendicular from origin to the plane $12x + 4y + 3z + 26 = 0$ is

(a) 12 (b) 2

(c) 26 (d) 4

The length of perpendicular from a point (x', y', z') to a plane $Ax + By + Cz + D = 0$ is

(a) $Ax' + By' + Cz' + D$ (b) $\frac{Ax' + By' + Cz' + D}{A' + B' + C'}$

(c) $\frac{Ax' + By' + Cz' + D}{\sqrt{A' + B' + C'}}$ (d) None of these

The distance between the parallel planes $2x - 2y + z + 1 = 0$ and $4x - 4y + 2z + 3 = 0$ is

(a) $\frac{1}{6}$ (b) $\frac{1}{2}$

(c) $\frac{1}{3}$ (d) 0

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Dept. of Mathematics
S.S.M. Barshi

Shri Shivaji Mahavidyalaya Barshi

(U.G.) Department of Mathematics

Internal Examination (2020-21)

Class - B.Sc. I

Date – 10 Dec 2021

Subject - Algebra

Paper no. - I

Que. Choose the correct answer for each of the following.

1] If characteristic equation of matrix A is $\lambda^3 - 2\lambda^2 + 3 = 0$ then find A^{-1} =?

a) $A^3 + 2A$

b) $-\frac{1}{3}(A^2 - 2A)$

c) $-\frac{1}{3}(A^3 - 2A^2)$

d) $2A^2 + A + 3$

2] If A = $\begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$ then A^3= .....

a) $\begin{bmatrix} 9 & -4 \\ -8 & 17 \end{bmatrix}$

b) $\begin{bmatrix} 15 & -21 \\ 10 & -3 \end{bmatrix}$

c) $\begin{bmatrix} -7 & 30 \\ 60 & -67 \end{bmatrix}$

d) $\begin{bmatrix} 7 & 30 \\ 60 & 37 \end{bmatrix}$

3] If A = $\begin{bmatrix} 2 & -1 \\ 1 & 3 \end{bmatrix}$ then find $A^3 - 5A^2 + 7A$.

a) $A^2 + 5A$

b) 0

c) $A^3 + 7A$

d) $-5A + 7I$

4] Matrix A is invertible if and only if .....

a) $|A| = 0$

b) $|A| \neq 0$

c) $A = A'$

d) $A^2 = I$

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5] If A is $n \times n$ matrix then ..... is symmetric matrix

a) $\frac{1}{2}(A - A')$

b) $\frac{1}{2}(A + A')$

c) $\frac{1}{3}(A - A')$

d) $\frac{1}{4}(A + A')$

6] The inverse of the matrix is $\begin{bmatrix} 2 & 1 \\ 0 & 4 \end{bmatrix}$ .....

a) $\begin{bmatrix} 1/2 & 0 \\ 1/8 & 1/4 \end{bmatrix}$

b) $\begin{bmatrix} 1/2 & 0 \\ -1/8 & 1/4 \end{bmatrix}$

c) $\begin{bmatrix} 1/2 & -1/8 \\ 0 & 1/4 \end{bmatrix}$

d) $\begin{bmatrix} -1/2 & 1/8 \\ 0 & -1/4 \end{bmatrix}$

7] The characteristic polynomial of matrix $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ is .....

a) $\lambda^2 - 5\lambda - 2$

b) λ^2

c) λ^3

d) $\lambda^2 + 5\lambda - 2$

8] A square matrix is called an idempotent matrix if .....

a) $A^2 = A$

b) $A^2 = I$

c) $A^T = A$

d) $A^n = 0$

9] Find the trace of matrix $\begin{bmatrix} 1 & 2 & 4 & 3 \\ 5 & 5 & 2 & 1 \\ 7 & 9 & -2 & 3 \\ 0 & 1 & 0 & 3 \end{bmatrix}$

a) 7

b) 10

c) 11

d) 9

B.Sc. II - 2020-21

B.Sc. II Mathematics-Test (Laplace Transform)

$L\{\int_0^t F(x)dx\} = \ldots$

(a) $\frac{1}{p}f(p)$ (b) $\frac{1}{p}f'(p)$ (c) $\frac{1}{p^2}f(p)$ (d) None

$L\{\frac{1}{t}F(t)\} = \ldots$

(a) $\int_0^\infty f(x)dx$ (b) $\int_a^b f(x)dx$ (c) $\int_a^b f(x)dx$ (d) $\int_p^\infty f(x)dx$

$L\{tF(t)\} = \ldots$

(a) $-f(p)$ (b) $f(p)$ (c) $-f'(p)$ (d) None

$L\{\sin at\} = \ldots$

(a) $\frac{1}{p^2+a^2}$, $p>0$ (b) $\frac{1}{p^2-a^2}$, $p>|a|$ (c) $\frac{a}{p^2+a^2}$ (d) None

$L\{\cos at\} = \ldots$

(a) $\frac{1}{p^2-a^2}$, $p>0$ (b) $\frac{p}{p^2-a^2}$, $p>|a|$ (c) $\frac{p}{p^2+a^2}$ (d) None

$L\{\sinh at\} = \ldots$

(a) $\frac{1}{p^2-a^2}$, $p>|a|$ (b) $\frac{a}{p^2-a^2}$, $p>0$ (c) $\frac{a}{p^2+a^2}$, $p>0$ (d) None

$\int_0^\infty u^{n-1}e^{-u}du = \ldots$ function if $n>0$

(a) $\beta(m,n)$ (b) $\sqrt{n}$ (c) $\overline{e}$ (d) $\lfloor n$

$\int_0^\infty \frac{e^{-3t}-e^{-6t}}{t}\cdot dt = \ldots$

(a) $\log 3$ (b) $\log 5$ (c) $\log 2$ (d) $\log 6$

$L\{t^3e^{2t}\} = \ldots$

(a) $\frac{3}{(p+3)^4}$ (b) $\frac{3}{(p-3)^4}$ (c) $\frac{6}{(p+3)^4}$ (d) None

$L\{\cos^2 t\} = \ldots$

(a) $\frac{1}{p^3-25}$, $p>0$ (b) $\frac{1}{p^2+25}$ (c) $\frac{p}{p^2-25}$ (d) $\frac{p}{p^2+25}$

$L\{\frac{\cos at}{t}\} = \ldots$

(a) exist (b) does not exist (c) $\tan^{-1}(\frac{a}{p})$ (d) None

$L\{2e^{3t}-e^{-3t}\} = \ldots$

(a) $\frac{p+9}{p^2+9}$ (b) $\frac{p+9}{p^2-9}$, $p>3$ (c) $\frac{p-9}{p^2+9}$ (d) None

$L\{t\cdot\sinh at\} = \ldots$

(a) $\frac{1}{(p^2-a^2)^2}$ (b) $\frac{2ap}{(p^2+a^2)^2}$ (c) $\frac{2ap}{(p^2-a^2)^2}$ (d) None

$L\{e^{at}\} = \ldots$

(a) $\frac{1}{p+a}$, $p>0$ (b) $\frac{1}{p-a}$, $p>a$ (c) $\frac{a}{p+a}$, $p>a$ (d) None

$L\{\frac{\sin at}{t}\} = \ldots$

(a) $\tan^{-1}(\frac{a}{p})$ (b) $\tan^{-1}(\frac{1}{p})$ (c) $\tan^{-1}(\frac{p}{a})$ (d) None

$L\{t^n\} = \ldots$

(a) $\frac{n!}{p^{n+1}}$, $p>0$ (b) $-\frac{n!}{p^n}$, $p>0$ (c) $-\frac{n!}{p^2}$, $p>0$ (d) None

$L\{e^{at}F(t)\} =$

(a) $f(p)$ (b) $f(a)$ (c) $f(p+a)$ (d) $f(p-a)$

$L\{F(at)\} = \ldots$

(a) $\frac{1}{a}\cdot f(\frac{p}{a})$ (b) $f(\frac{p}{a})$ (c) $\frac{1}{a}f(\frac{a}{p})$ (d) None

$L\{F'(t)\} = \ldots$

(a) $pf(p)$ (b) $pf(p)-F(0)$ (c) $pf(p)+F(0)$ (d) None

$\int_0^\infty \frac{\sin t}{t}\cdot dt = \ldots$

(a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ (c) $\frac{\pi}{3}$ (d) $\frac{\pi}{6}$

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SHRI SHIVAJI MAHAVIDYALAYA PARSHI

B.Sc. III - 2020-21.

B.Sc. III Mathematics

A superset of linear dependent vectors is
(a) linear dependent (b) linear independent
(c) may be linear independent (d) none of these

If V is a set of linear independent vectors, then
(a) $0 \in V$ (b) $1 \in V$
(c) $0 \notin V$ (d) $1 \notin V$

Every field in vector space over
(a) group (b) ring
(c) field itself (d) none of these

Linear span of empty set is
(a) {1} (b) {0}
(c) V (d) none of these

If W is a subspace of n-dimensional vector space then
(a) dim W = n (b) dim W ≤ n
(c) dim W < n (d) dim W ≥ n

A superset of linear dependent set of vectors is
(a) may be linear independent (b) linear independent
(c) linear dependent (d) none of these

A subset of linear independent vectors is
(a) linear dependent (b) linear independent
(c) may be dependent (d) none of these

Vector space has ..... binary operation.
(a) one (b) two
(c) three (d) none of these

Vector space is defined over an algebraic structure
(a) Group (b) Field
(c) Ring (d) None of these

Any two vectors u and v are linearly dependent if one of them is ... multiple.
(a) scalar (b) vector
(c) even (d) none of these

The dimension of V(F) of complex number over a field of real number is
(a) 2 (b) 1
(c) 0 (d) infinite

The dimension of V(F) of complex number over a field of complex number is
(a) 2 (b) 0
(c) 1 (d) infinite

A basis of a vector space cannot contain
(a) a non-zero vector (b) positive vector
(c) zero vector (d) negative vector

A subspace of V(F) other than V(F) is known as ..... subspace.
(a) zero (b) improper
(c) proper (d) null

Intersection of two subspaces S_1 and S_2 of a vector space V(F)
(a) always a subspace (b) not a subspace
(c) iff $S_1 \subset S_2$ or $S_2 \subset S_1$ (d) none of these

Dept. of Mathematics
S.S.M. Barshi.

B.Sc. III (20-21)

B. Sc. III Mathematics

Empty set ϕ is

(a) linearly dependent (b) non-linear independent

(c) linearly independent (d) non-linear dependent

If W is a subspace of vector space V(F), then (V/W) is

(a) quotient space (b) unitary space

(c) whole space (d) none of these

Any two vectors u and v are linearly dependent if one of them is ..... multiple

(a) scalar (b) vector

(c) even (d) none of these

Let $T : V(R) \to V_2(R)$ be defined such that $T(a + ib) = (a, b)$

(a) T is one-to-one only (b) T is onto only

(c) T is one-to-one and onto (d) none of these

If A and B are square matrices of the same order, and tr means trace then

(a) $tr(AB) = tr(A)\ tr(B)$ (b) $tr(AB) = tr(BA)$

(c) $tr(AB) = tr(A) + tr(B)$ (d) none of these

For a ring R of real numbers, if $(\mathbf{Z}, +, \cdot)$ and $(Q, +, \cdot)$ are subrings then

(a) Z is ideal Q is not an ideal (b) Q is ideal but Z is not an ideal

(c) both Z and Q are ideals (d) both Z and Q are not ideals

If V is a set of linear independent vectors, then

(a) $0 \in V$ (b) $1 \in V$

(c) $0 \notin V$ (d) $1 \notin V$

Every field in vector space over

(a) group (b) ring

(c) field itself (d) none of these

If W is a subspace of vector space V(F) then dim (V/W) =

(a) dim V + dim W (b) dm $(V \cap W)$

(c) dim V – dim W (d) none of these

Let $T : U \to V$ be a linear map on vector spaces U and V over T. Then rank (T) + nullity (T) = ...

(a) dim U (b) dim V

(c) dim $(U \cap V)$ (d) dim $(U \cup V)$

Let $T : R^3 \to R^2$ and $U : R^2 \to R^3$ be linear transformations. Then UT is

(a) identity (b) invertible

(c) not invertible (d) none of these

T is non-singular if

(a) Rank T = {0} (b) N(T) = {0}

(c) dim (V) = 0 (d) None of these

Vector space has ..... binary operation.

(a) one (b) two

(c) three (d) none of these

Vector space is defined over an algebraic structure

(a) Group (b) Field

(c) Ring (d) None of these

A superset of linear dependent

(a) may be linear independent (b) linear independent

(c) linear dependent (d) none of these

A subset of linear independent vectors is

(a) linear dependent (b) linear independent

(c) may be dependent (d) none of these

A superset of linear dependent vectors is

(a) linear dependent (b) linear independent

(c) may be linear independent (d) none of these

An element x in a ring R is idempotent if for n, $k \in Z$, $x \in R$

(a) $x^n = 0$ (b) $x^2 = x$

(c) $x^n = k$ (d) none of these

Characteristic of an integral domain is

(a) 0 (b) 2

(c) 12 (d) none of these

An ideal is

(a) both left and right ideal (b) left but not right ideal

(c) right but not left ideal (d) none of these

$V \times \{0\}$ is a isomorphic to

(a) {0} (b) V

(c) $V \times V$ (d) none of these

In the ring $(R, \oplus_{10}, \odot_{10})$ where R = {0, 2, 4, 6, 8} multiplicative identity is

(a) 2 (b) 4

(c) 8 (d) 6

Dept. of Mathematics
S.S.M. Barshi.

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics.

Internal Exam 2021-22.

Class – B.Sc. II | Marks -10

Sub – Abstract Algebra I | Paper No – VIII

Name Of Student: _____

Roll Number: _____

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1) Order of Permutation group S_n is _____

A) $n!$ B) $(n-1)!$ C) $(n+1)!$ D) n

2) The order of dihedral group D_n is _____

A) n B) $n-1$ C) $2n$ D) $n+1$

3) $G=(Z, -)$ is not a group since it does not satisfy _____ property

A) Closure. B) Associativity C) Identity D) Inverse.

4) A subset H of group $(G, \cdot)$ is subgroup if $\forall\ a, b \in H$

A) $a \cdot b \in H$ B) $a \cdot b = b \cdot a$ C) $a \cdot b^{-1} \in H$ D) none of the these.

5) $G=(Z, \cdot)$ is not group since _____ property does not hold.

A) Associativity B) Closure C) Inverse D) Identity

6) A group $(G, \cdot)$ is said to be abelian if $\forall\ a, b \in G$

A) $a \cdot b = b \cdot a$ B) $a \cdot b^{-1} = b \cdot a^{-1}$ C) $a^{-1} \cdot b = b^{-1} \cdot a$ D) none of these.

---

7) In permutation group S_3 the order of an element $\begin{pmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \end{pmatrix}$ is _____

A) 2 B) 1 C) 3 D) 4

8) Which of the following is not group

A) $(Z, +)$ B) $(Q, \cdot)$ C) $(N, +)$ D) S_n

9) In group $G=(Z_5, +_5)$ inverse of an element 3 is _____

A) 1 B) 2 C) 3 D) 4

10) Which of the following is group

A) $(Z, -)$ B) $(R, -)$ C) $(Z_4, \cdot)$ D) $(R, \cdot)$.

Dept. of Mathematics
S.S.M. Barshi.

B. Sc IV - 2021-22

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics.

Internal Exam.

Subject: Numerical Analysis. **Day and date:** Wednesday, 11/05/22

Class – T. Y. B. Sc (XIV) **Marks:** 20

Instructions: 1) All questions are compulsory.

2) Figure to the right indicate full marks.

3)Use of Scientific calculators are allowed.

Q.1. Fill In the blanks by choosing correct alternatives given below. (any five) 5

1) The $(n+1)^{th}$ order forward difference of nth degree polynomial is?

A) one B) zero C) two D) None of these.

2)The relation between E, Δ, *and* ∇ is

A) $\Delta = 1 - E$ B) $\Delta = \nabla$ C) $\Delta = E\nabla$ D) None of these.

3) If the given data is not equally space and interpolation is near the beginning of the data then _____ Interpolation is Used.

A) Lagrange's B) Newtons forward difference
C) Newtons Backward difference. D) None of these.

4)The value of $\Delta^n e^x =$ _____, the interval of differencing being 1.

A) $(e+1)^n e^x$ B) $(e-1)^n e^x$

C) e^x D) ne^x

5)The n^{th} forward difference of $f(x)$ is given by

A) $\Delta^n f(x+h) - \Delta^{n-1} f(x)$ B) $\Delta^{n-1} f(x+h) - \Delta^{n-1} f(x)$

C) $\Delta^{n-1} f(x+h) - \Delta f(x)$ D) None of these.

6)The value of $\left(\frac{\Delta^2}{E}\right) e^x =$ _____

A) $e^{-h}\Delta^2 e^x$ B) $e^h \Delta^2 e^x$

C) $e^{-h}\Delta e^x$ D) None of these.

Dept. of Mathematics
S.S.M. Barshi.

Q.2.Attempt any two of the following:

1)State newtons forward Interpolation formula.

2)Evaluate $\Delta^2(ab^x)$

3) With Usual notation prove that $\Delta = E\nabla = \nabla E$

6

Q.3.Attempt any two of the following.

1)Find $f(10)$ by using Lagrange's formula for

x	5	6	9	11
$f(x)$	12	13	14	16

2)Using Newtons forward formula find the value of $f(1.6)$ if

x	1	1.4	1.8	2.2
$f(x)$	3.49	4.82	5.96	6.5

3)Prove that $e^x = \left(\frac{\Delta^2}{E}\right)e^x . \frac{Ee^x}{\Delta^2 e^x}$, the interval of differencing being h.

5

Q.4.Attempt any One of the following.

1) State and prove Lagrange's Interpolation formula for unequal intervals.

2)State and Prove Newtons backward Interpolation formula.

3)Find $f(22)$ from the Gauss forward formula:

x	20	25	30	35	40	45

Choose the correct alternative for each of the following :

1. $\int_0^{\pi/2} \int_0^{\sin\theta} r\, d\theta\, dr$ is equal to .....

   (a) $\int_0^{\pi/2} \sin\theta\, d\theta$ (b) $\int_0^{\sin\theta} \frac{1}{2}\pi r dr$

   (c) $\int_0^{\pi/2} \frac{\sin^2\theta}{2} d\theta$ (d) none of these

2. Value of $\int_1^2 \int_0^{1/2} y\, dy\, dx$ is equal to .....

   (a) $\frac{7}{6}$ (b) $\frac{1}{6}$

   (c) $\frac{2}{3}$ (d) $\frac{7}{3}$

3. Value of $\int_1^a \int_1^b \frac{1}{xy} dx\, dy$ = ...

   (a) log (ab) (b) $\log\left(\frac{a}{b}\right)$

   (c) (log a) (log b) (d) $\frac{\log a}{\log b}$

4. $\int_1^2 \int_0^{3y} y\, dy dx$ = ...

   (a) 3 (b) 5

   (c) 7 (d) 9

5. Value of $\int_0^a \int_0^b (x^2 + y^2)\, dx\, dy$ is .....

   (a) $(a^2 + b^2)$ (b) $\frac{ab}{3}(a^2 + b^2)$

   (d) $a^2b^2(a +$

6. Area laying between the parabola $y = 4x - x^2$ and the line $y = k$ is ...

   (a) $\frac{1}{2}$ unit (b) 3 unit

   (c) $\frac{3}{2}$ unit (d) $\frac{9}{2}$ unit

7. The double integral $\int_0^1 \int_0^1 (x^2 + y^2)\, dx\, dy$ = ...

   (a) 0 (b) 1

   (c) $\frac{1}{3}$ (d) $\frac{2}{3}$

8. $\int_0^1 \int_y^{\sqrt{y}} (x^2 + y^2)\, dy\, dx$ = ...

   (a) $\frac{1}{35}$ (b) $\frac{2}{35}$

   (c) $\frac{3}{35}$ (d) $\frac{4}{35}$

9. $\int_1^2 \int_0^{3y} y\, dy\, dx$ = ...

   (a) 3 (b) 7

   (c) 9 (d) 4

10. Value of $\int_0^{\pi/2} \int_0^{a\cos\theta} r \sin\theta\, dr\, d\theta$ is .....

    (a) $\frac{a^2}{6}$ (b) $\frac{a^2}{3}$

    (c) $\frac{a^2}{2}$ (d) $\frac{5a^2}{6}$

B.Sc. I - 2021-22

Shri Shivaji Mahavidyalaya Barshi

(U.G.) Department of Mathematics

Internal Examination (2020-21)

Class - B.Sc. I

Date – 10 Dec 2021

Subject - Algebra

Paper no. - I

Que. Choose the correct answer for each of the following.

1] If characteristic equation of matrix A is $\lambda^3 - 2\lambda^2 + 3 = 0$ then find A^{-1} =?

a) $A^3 + 2A$

b) $-\frac{1}{3}(A^2 - 2A)$

c) $-\frac{1}{3}(A^3 - 2A^2)$

d) $2A^2 + A + 3$

2] If A = $\begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$ then A^3= .....

a) $\begin{bmatrix} 9 & -4 \\ -8 & 17 \end{bmatrix}$

b) $\begin{bmatrix} 15 & -21 \\ 10 & -3 \end{bmatrix}$

c) $\begin{bmatrix} -7 & 30 \\ 60 & -67 \end{bmatrix}$

d) $\begin{bmatrix} 7 & 30 \\ 60 & 37 \end{bmatrix}$

3] If A = $\begin{bmatrix} 2 & -1 \\ 1 & 3 \end{bmatrix}$ then find $A^3 - 5A^2 + 7A$.

a) $A^2 + 5A$

b) 0

c) $A^3 + 7A$

d) $-5A + 7I$

4] Matrix A is invertible if and only if .....

a) $|A| = 0$

b) $|A| \neq 0$

c) $A = A'$

d) $A^2 = I$

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S.S.M. Barshi.

SHRI SHIVAJI MAHAVIDYALAYA BARSHI

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Internal Exam (2022-23)

Class: B.sc-II **Marks:** 10

Subject: Laplace Transform **Date:** / /2023

Paper Number: VI

Q.1 Fill in the blanks by choosing correct alternatives given below: **[02]**

1. If $L\{F(t)\} = f(p)$ then $L\{F''(t)\}$=----------

   a) $pf(p) - F(0) - F'(0)$ b) $p^2f(p) - pF(0) - F'(0)$

   c) $p^2f(p) - pF'(0) - F(0)$ d) $p^2f(p) - F(0) - F'(0)$

2. $\int_0^\infty te^{-3t}sint\ dt$=----------

   a) $\frac{3}{50}$ b) $\frac{3}{25}$ c) $\frac{2}{50}$ d) $\frac{124}{125}$

Q.2 Solve any four of the followings. **[08]**

1. Find $L\{t(3sin2t - 2cos2t)\}$

2. If $L\{F(t)\} = f(p)$ then show that $L\left\{\frac{F(t)}{t}\right\} = \int_p^\infty f(x)\ dx$

3. If $L\{F(t)\} = f(p)$ then show that $L\{F(at)\} = \frac{1}{a}f\left(\frac{p}{a}\right)$

4. Find the Laplace transform of the following periodic function

$$F(t) = \begin{cases} 1, & 0 < t < 1 \\ -1, & 1 < t < 2 \end{cases}$$

Extended periodically with period 2.

5. Find $L\{F(t)\}$ if $F(t) = \begin{cases} cos\left(t - \frac{2\pi}{3}\right), & t > \frac{2\pi}{3} \\ 0, & t < \frac{2\pi}{3} \end{cases}$

6. Prove that $L\left\{\frac{e^{-at} - e^{-bt}}{t}\right\} = log\left(\frac{p+b}{p+a}\right)$

7. Find $L\{(t+2)^2e^t\}$

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Shri Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Internal Examination(2022 -23)

Class – F. Y. B.Sc Subject – Algebra Date – 21/11/22 Mark-10 Paper number: I

Q.1. Attempt any five of the following **10M**

1) find the value of $(1+2i)(1+3i)(2+i)^{-1}$

2)Find modulus and argument of $z=-\sqrt{3}+i$

3)Write the complex number $z=1+\sqrt{3}i$ in polar form.

4)find all values of $(1+i)^{\frac{1}{3}}$

5)Write the complex number $z=-1+i$ in polar form.

6)write the expansion of $\cos 5\theta$ in terms of powers of trigonometric ratio of θ

7) State Demoivre's theorem.

8)write the expansion of $\sin 4\theta$ in terms of powers of trigonometric ratio of θ

Shri Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Internal Examination(2022 -23)

Class – F. Y. B.Sc Subject – Algebra Date – 21/11/22 Mark-10 Paper number: I

Q.1. Attempt any five of the following **10M**

1) find the value of $(1+2i)(1+3i)(2+i)^{-1}$

2)Find modulus and argument of $z=-\sqrt{3}+i$

3)Write the complex number $z=1+\sqrt{3}i$ in polar form.

4)find all values of $(1+i)^{\frac{1}{3}}$

5)Write the complex number $z=-1+i$ in polar form.

6)write the expansion of $\cos 5\theta$ in terms of powers of trigonometric ratio of θ

7) State Demoivre's theorem.

8)write the expansion of $\sin 4\theta$ in terms of powers of trigonometric ratio of θ.

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Internal Exam (2022-23)

Class: B.sc-III **Marks:** 10

Subject: Real Analysis **Date:** / /2023

Paper number: X

Q.1 Solve any Four of the followings: **[10]**

1. Show that $\sqrt{8}$ is not a rational number.
2. If A and B are countable then show that $A \times B$ is countable.
3. Show that countable union of countable sets is countable.
4. Show that every convergent sequence is bounded.
5. Show that every monotonic increasing bounded is convergent.

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Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Internal Exam (2022-23)

Class: B.sc-III **Marks:** 10

Subject: Algebra II **Date:** / /2023

Paper Number: IX

Q.1 Fill in the blanks by choosing correct alternatives given below: **[05]**

1. Which is not a ring?

a) $(\mathbb{R}, +, \cdot)$ b) $(\mathbb{Z}, +, \cdot)$ c) $(\mathbb{N}, +, \cdot)$ d) $(\mathbb{Q}, +, \cdot)$

2. For $a \in R$, suppose that b and c are inverses of a then

a) $b.c = 1$ b) $b = c$ c) $b + c = 0$ d) None of these

3. Which is not a necessary condition for ring R with respect to multiplication.

a) R is semi-group b) R is monoid c) R is group d) Both a & b

4. If R is a ring, then which is must be true?

a) Each element of R has additive inverse.

b) Each element of R has multiplicative inverse.

c) R has multiplicative identity.

d) R is abelian group with respect to multiplication.

5. If R is ring, then which is not true?

a) $a.(b + c) = a.b + a.c$ b) $(b + c).a = b.a + c.a$ c) $a.0 = 0$ d) $a.a^{-1} = 0$

Q.2 Solve any five of the followings. **[05]**

Let R be a ring and $a, b, c \in R$

1. The zero element (0) of R is unique.
2. Each element of R has a unique negative.
3. State and prove right cancellation law.
4. $(-a).(-b) = a.b$
5. $a.(-b) = (-a).b = -(a.b)$
6. Prove that a ring has at most one unity.

Dept. of Mathematics
S.S.M. Barshi

Shri SHINDE M. Y.

Department of mathematics

S. S. M. Barshi

Date:- 25/04/2019.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2018 – 19

This completion report is given on this 25th day April 2019.

Head of Maths. Dept.
Shri Shivaji Mahavidyalaya,
Barsi 413411

Shri Talekar S. D.

Department of mathematics

S. S. M. Barshi

Date:- 25/04/2019.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

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Head of Maths. Dept.
Shri Shivaji Mahavidyalaya,
Barsi. 413411

Shri DURE A. A.

Department of mathematics

S. S. M. Barshi

Date:- 25/04/2019.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

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This completion report is given on this 25th day April 2019.

Head of Maths. Dept.
Shri Shivaji Mahavidyalaya.
Barsi. 413411

Shri SHINDE M. Y.

Department of mathematics

S. S. M. Barshi

Date:- 25/04/2020.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2019 – 20

This completion report is given on this 25th day April 2020.

Head of Math. Dept.
Shri Shivaji Mahavidyalaya,
Barsi, 41 11

Shri Khadtare A. B.

Department of mathematics

S. S. M. Barshi

Date:- 25/04/2020.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2019 – 20

This completion report is given on this 25th day April 2020.

Head of Maths. Dept.
Shri Shivaji Maha vidyalaya,
Barsi. 41 .11

Shri Khadtare A. B.

Department of mathematics

S. S. M. Barshi

Date:- 25/04/2020.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2019 – 20

This completion report is given on this 25th day April 2020.

Head of Maths. Dept.
Shri Shivaji Maha vidyalaya,
Barsi, 41 .11

Shri. Shinde M. Y.
Department of Mathematics
S. S. M. Barshi
Date:- 25/07/2021.

To
The principal
S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2020 – 21

This completion report is given on this 25th day July 202.

Remark: Due To covid Pandemic Syllabus completed by online method.

Name And Sign

HOD Dept of Mathematics

Dept. of Mathematics
S.S.M.Barshi.

Shri Sabale N. V.
Department of mathematics
S. S. M. Barshi
Date:- 25/07/2022.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2021 – 22

This completion report is given on this 25th day July 2022.

Remark: Due To covid Pandemic Syllabus completed by online method from Aug 2021 to Feb 2022.

Name and Sign

Asst professor

Name and Sign

HOD Dept of Mathematics

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shinde M. Y.

Department of mathematics

S. S. M. Barshi

Date:- 25/07/2022.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2021 – 22

This completion report is given on this 25th day July 2022.

Remark: Due To covid Pandemic Syllabus completed by online method fron Aug 2021 to Feb 2022.

Name And Sign

HOD Dept of Mathematics

Dept. of Mathematics
S.S.M. Barshi.

Miss Javir P. S.
Department of mathematics
S. S. M. Barshi
Date:- 25/07/2022.

To

The principal

S. S. M. Barshi

Sub: - Syllabus completion report

R/S

I have satisfactorily completed the prescribed syllabus of B.Sc. part I, II and III according to the workload assigned to me in the academic year 2021 – 22

This completion report is given on this 25th day July 2022.

Remark: Due To covid Pandemic Syllabus completed by online method from Aug 2021 to Feb 2022.

Name and Sign

Asst professor

Name and Sign

HOD Dept of Mathematics

Dept. of Mathematics
S.S.M. Barshi.

Shri. Sabale N.V.
Department of Mathematics
Shri. Shivaji Mahavidyalaya, Barshi
Date: 30/05/2023

To

The Principal,

Shri. Shivaji Mahavidyalaya, Barshi

Subject: **Syllabus Completion Report**

Respected Mam/Sir,

I have satisfactorily completed the prescribed syllabus of B.Sc. I, II & III according to the workload assigned to me in the academic year 2022-2023.

This completion report is given on this 30th day May 2023.

Your's Faithfully

Sabale

(Mr. Sabale N.V.)

Shri. Shinde M.Y.
Department of Mathematics
Shri. Shivaji Mahavidyalaya, Barshi
Date: 30/05/2023

To

The Principal,

Shri. Shivaji Mahavidyalaya, Barshi

Subject: **Syllabus Completion Report**

Respected Mam/Sir,

I have satisfactorily completed the prescribed syllabus of B.Sc. I, II & III according to the workload assigned to me in the academic year 2022-2023.

This completion report is given on this 30th day May 2023.

Your's Faithfully

(Mr. Shinde M.Y.)

Shri. Sathe R.R.
Department of Mathematics
Shri. Shivaji Mahavidyalaya, Barshi
Date: 30/05/2023

To

The Principal,

Shri. Shivaji Mahavidyalaya, Barshi

Subject: **Syllabus Completion Report**

Respected Mam/Sir,

I have satisfactorily completed the prescribed syllabus of B.Sc. I, II & III according to the workload assigned to me in the academic year 2022-2023.

This completion report is given on this 30th day May 2023.

Your's Faithfully

(Mr. Sathe R.R.)

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2018-19

Name of Teacher: Shinde M. Y. **Class:** BSc.I

Subject: Calculus and Geometry. **Paper No:** II and III

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Differentiation.	
3	August	25	12	Functions of Two Variables.	
4	September	26	13	Reduction formulae.	
5	October	24	12	Vector calculus.	
6	November	24		Diwali Vacation.	
7	December	25	13	Change of Axis.	Extra lectures
8	January	24	12	Plane.	Extra lectures
9	February	20	10	Sphere.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning Academic Year: 2018-19

Name of Teacher: Talekar S.D. **Class:** BSc.I

Subject: Algebra and Differential Equation. **Paper No:** I and IV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Matrices.	
3	August	25	12	Linear Equations.	
4	September	26	13	Complex Number.	
5	October	24	12	Transcendental Functions.	
6	November	24		Diwali Vacation.	
7	December	25	13	Diff equation Unit I	Extra lectures
8	January	24	12	Diff equation unit II	Extra lectures
9	February	20	10	Diff equation Unit III and Unit IV.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers: **Signature of HOD**

Talekar S. D.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2018-19

Name of Teacher: Dure A. A. **Class:** BSc.II

Subject: Real Analysis and Differential Equations. **Paper No:** VI and VII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Real Numbers.	
3	August	25	12	Real Sequences.	
4	September	26	13	Infinite Series.	
5	October	24	12	Infinite Series.	
6	November	24		Diwali Vacation.	
7	December	25	13	Diff equation unit I.	Extra lectures
8	January	24	12	Diff equation unit II and Unit III.	Extra lectures
9	February	20	10	Diff equation unit IV.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Dure A A.

Signature of HOD:

Head of Maths. Dept.
Shri Shivaji Mahavidyalaya,
Barshi, 41 . 11

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year: 2019-20**

Name of Teacher: Shinde M. Y. **Class:** BSc.III

Subject: Integral Calculus and Programming in C. **Paper No:**XI and XVI

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Improper Integral.	
3	August	25	12	Improper Integral.	
4	September	26	13	Betta and Gamma function.	
5	October	24	12	Multiple integral.	
6	November	24		Diwali Vaccation.	
7	December	25	12	Overview of C. Unit I and II	Extra lectures
8	January	24	12	Unit no III, IV and V	Extra lectures
9	February	20	10	Unit no VI, VII and VIII	Extra lectures
10	March			University Practical Exam	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Head of Maths. Dept.
Shri Shivaji Mahavidyalaya,
Barsi. 413 411

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2019-20

Name of Teacher: Khadatare A. B. **Class:** BSc.III

Subject: Complex Analysis Numerical Analysis. **Paper No:** X and XIV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Analytic Functions.	
3	August	25	12	Complex Integration.	
4	September	26	13	Complex Integration.	
5	October	24	12	Calculus of Residues.	
6	November	24		Diwali Vacation.	
7	December	25	13	Finite Differences. And Interpolation.	Extra lectures
8	January	24	12	Numerical Differentiation and Integration.	Extra lectures
9	February	20	10	Difference equations.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Khadatare A.B.

Signature of HOD:

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2019-20

Name of Teacher: Surwase D. M. **Class:** BSc.III

Subject: PDE and Metric Space. **Paper No:** XII and XIII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Linear PDE. Of order one.	
3	August	25	12	Nonlinear PDE of order one.	
4	September	26	13	Linear PDE with constant coefficient.	
5	October	24	12	Linear PDE with constant coefficient.	
6	November	24		Diwali Vacation.	
7	December	25	13	Limits and Metric Spaces.	Extra lectures
8	January	24	12	Continuous functions on metric spaces.	Extra lectures
9	February	20	10	Completeness and compactness.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Surwase D.M.

Signature of HOD:

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2019-20

Name of Teacher: Surwase D. M. **Class: BSc.III**

Subject: Algebra II and Integral Transform. **Paper No:**IX and XV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Introduction to Rings.	
3	August	25	12	Ouotient Rings and Vector Spaces	
4	September	26	13	Linear Transformation and Matrices.	
5	October	24	12	Inner product space.	
6	November	24		Diwali Vacation.	
7	December	25	13	Laplace Transform.	Extra lectures
8	January	24	12	The Inverse Laplace Transform.	Extra lectures
9	February	20	10	Application of Laplace Transform.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Surwase D.M.

Signature of HOD:

Head of Mathematics

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shinde M. Y. **Class:** BSc.I

Subject: Calculus and Geometry. **Paper No:** II and III

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Differentiation.	
3	August	25	12	Functions of Two Variables.	
4	September	26	13	Reduction formulae.	
5	October	24	12	Vector calculus.	
6	November	24		Diwali Vacation.	
7	December	25	13	Change of Axis.	Extra lectures
8	January	24	12	Plane.	Extra lectures
9	February	20	10	Sphere.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shri Shine M. Y.

Class: BSc.I

Subject: Algebra and Differential Equation

Paper No: I and IV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Matrices.	
3	August	25	12	Linear Equations.	
4	September	26	13	Complex Number.	
5	October	24	12	Transcendental Functions.	
6	November	24		Diwali Vacation.	
7	December	25	13	Diff equation Unit I	Extra lectures
8	January	24	12	Diff equation unit II	Extra lectures
9	February.	20	10	Diff equation Unit III and Unit IV.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shinde M. Y. **Class:** BSc.II

Subject: Laplace Transform and Differential Equations. **Paper No:** VI and VII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Laplace Transform.	
3	August	25	12	The Inverse Laplace Transform.	
4	September	26	13	Application of Laplace Transform.	
5	October	24	12	Application of Laplace Transform.	
6	November	24		Diwali Vacation.	
7	December	25	13	Laplace Transform.	Extra lectures
8	January	24	12	The Inverse Laplace Transform.	Extra lectures
9	February	20	10	Application of Laplace Transform.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shinde M. Y. **Class:** BSc.II

Subject: Differential Calculus and Abstract Algebra I **Paper No:** V and VIII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Tangents and Normals.	
3	August	25	12	Curvature.	
4	September	26	13	Jacobians	
5	October	24	12	Maxima and Minima.	
6	November	24		Diwali Vacation.	
7	December	25	13	Introduction to groups.	Extra lectures
8	January	24	12	Equivalence, Congruence Divisibility.	Extra lectures
9	February	20	10	Groups and Group Homomorphism.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shinde M. Y. **Class:** BSc.III

Subject: Complex analysis and metric space. **Paper No:** X and XIII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25	___	Admission Process.	
2	September.	24	___	____	
3	October	23	6	Analytic Functions.	
4	November.	16	12	Complex Integration.	
5	December.	25	18	Calculus of Residue.	
6	January	25	18	Calculus of residue.	
7	February	23	17	Limits and Metric Spaces.	
8	March	25	17	Continuous functions on metric spaces.	
9	April	23	17	Continuous functions on metric spaces.	
10	May	24	10	Completeness and compactness.	
11	Jun	26		University Practical Exam.	
12	July	26		University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shinde M. Y. **Class: BSc.III**

Subject: Algebra II and Numerical Analysis **Paper No:**IX and XIV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Introduction to Rings.	
3	August	25	12	Ouotient Rings and Vector Spaces	
4	September	26	13	Linear Transformation and Matrices.	
5	October	24	12	Inner product space.	
6	November	24		Diwali Vacation.	
7	December	25	13	Finite Differences. And Interpolation.	Extra lectures
8	January	24	12	Numerical Differentiation and Integration.	Extra lectures
9	February	20	10	Difference Equations.	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shinde M. Y **Class:** BSc.III

Subject: PDE and Integral Transform. **Paper No:** XII and XV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Linear PDE. Of order one.	
3	August	25	12	Nonlinear PDE of order one.	
4	September	26	13	Linear PDE with constant coefficient.	
5	October	24	12	Linear PDE with constant coefficient.	
6	November	24		Diwali Vacation.	
7	December	25	13	Laplace Transform.	Extra lectures
8	January	24	12	The inverse Laplace transform	Extra lectures
9	February	20	10	Application of Laplace transforms	Extra lectures
10	March			University Practical exam.	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2020-21

Name of Teacher: Shinde M. Y. **Class:** BSc.III

Subject: Integral Calculus and Programming in C. **Paper No:**XI and XVI

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	June			Admission Process.	
2	July	26	13	Improper Integral.	
3	August	25	12	Improper Integral.	
4	September	26	13	Betta and Gamma function.	
5	October	24	12	Multiple integral.	
6	November	24		Diwali Vaccation.	
7	December	25	12	Overview of C. Unit I and II	Extra lectures
8	January	24	12	Unit no III, IV and V	Extra lectures
9	February	20	10	Unit no VI, VII and VIII	Extra lectures
10	March			University Practical Exam	
11	April			University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Shinde M. Y. **Class:** BSc.III

Subject: Algebra II and Integral Calculus **Paper No:**IX and XVI

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25		Admission Process.	
2	September	24	13	Introduction to Rings.	
3	October	25	12	Quotient Rings and Vector Spaces	
4	November	16	10	Linear Transformation and Matrices.	
5	December	25	12	Inner product space.	
6	January	25	12	Improper Integral.	
7	February	22	10	Improper Integral.	
8	March	25	12	Beta and Gamma Function.	
9	April	23	11	Multiple Integral.	
10	May	24	10	Multiple Integral.	
11	June.	26	—	University Practical exam.	
12	July	26	—	University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Sabale N. V. **Class:** BSc.III

Subject: Real Analysis and Numerical Analysis. **Paper No:** XI and XIV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25		Admission Process.	
2	September	24	___	___	
3	October	23	6	Real Numbers.	
4	November	16	12	Real Sequences.	
7	December	25	18	Infinite Series.	
8	January	25	18	Infinite Series.	
9	February	23	17	Finite differences.	
10	March	25	17	Interpolation.	
11	April	23	17	Numerical differentiation and Integration.	
12	May	24	10	Difference Equations.	
13	Jun	___	___	University Practical Exam	
14	July	___	___	University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Sabale N. V. **Class:** BSc.III

Subject: Complex analysis and metric space. **Paper No:** X and XIII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25	___	Admission Process.	
2	September.	24	___	___	
3	October	23	6	Analytic Functions.	
4	November.	16	12	Complex Integration.	
5	December.	25	18	Calculus of Residue.	
6	January	25	18	Calculus of Residue.	
7	February	23	17	Limits and Metric Spaces.	
8	March	25	17	Continuous functions on metric spaces.	
9	April	23	17	Continuous functions on metric spaces.	
10	May	24	10	Completeness and compactness.	
11	Jun	26		University Practical Exam.	
12	July	26		University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Javir P. S. **Class:** BSc.III

Subject: PDE and Graph Theory **Paper No:** XII and XV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25		Admission Process.	
2	Septmber.	24		——	
2	October.	23	6	Linear PDE. Of order one.	Extra Lecture.
3	November	16	8	Nonlinear PDE of order one.	Extra Lecture.
4	December	25	13	Linear PDE with constant coefficient.	Extra Lecture.
5	January	25	13	Linear PDE with constant coefficient.	Extra Lecture.
6	February	23	12	Graph theory.	
7	March	25	13	Operations on Graphs	
8	April	23	11	Trees.	
9	May	24	12	Number system.	
10	June	26		University Practical exam.	
11	July	26		University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Sabale N. V. **Class:** BSc.II

Subject: Differential Calculus and Abstract Algebra I **Paper No:** V and VIII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25	___	Admission Process.	
2	September.	24	___	___	
3	October	23	6	Tangents and Normals.	
4	November.	16	12	Curvature.	
5	December.	25	18	Jacobian.	
6	January	25	18	Maxima and Minima.	
7	February	23	17	Introduction to groups.	
8	March	25	17	Equivalence, Congruence Divisibility.	
9	April	23	17	Groups and Group Homomorphism.	
10	May	24	10	Groups and Group Homomorphism.	
11	Jun	26	__	University Practical Exam.	
12	July	26	__	University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Javir P. S. **Class:** BSc.II

Subject: Laplace Transform and Differential Equations. **Paper No:** VI and VII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25	—	Admission Process.	
2	Septmber.	24	—	——	
2	October	23	6	Laplace Transform.	
3	November	16	8	The Inverse Laplace Transform.	
4	December	25	13	The Inverse Laplace Transform.	
5	January	25	13	Application of Laplace Transform.	
6	February	23	12	Diif Equation Unit 1	
7	March	25	13	Diif Equation Unit 2	
8	April	23	11	Diif Equation Unit 3	
9	May	24	12	Diif Equation Unit 4 and 5	
10	Jun	26	—	University Practical exam.	
11	July	26	—	University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Shinde M. Y. **Class:** BSc.I

Subject: Calculus and Geometry. **Paper No:** II and III

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25	—	Admission Process.	
2	September	24	13	Differentiation.	
3	October	25	12	Functions of Two Variables.	
4	November	16	10	Reduction formulae.	
5	December	25	12	Vector calculus.	
6	January	25	12	Vector calculus.	
7	February	22	10	Change of Axis.	
8	March	25	12	Plane.	
9	April	23	11	Sphere.	
10	May	24	10	Sphere.	
11	June.	26	—	University Practical exam.	
12	July	26	—	University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2021-22

Name of Teacher: Javir P. S.

Class: BSc.I

Subject: Algebra and Differential Equation **Paper No:** I and IV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	August	25	—	Admission Process.	
2	Septmber.	24	—	——	
2	October	23	6	Matrices	
3	November	16	8	Linear equations	
4	December	25	13	Complex number	
5	January	25	13	Transcendental functions	
6	February	23	12	Diff Equation Unit 1 (A)	
7	March	25	13	Diff Equation Unit 1(B)	
8	April	23	11	Diff Equation Unit 2 (A)	
9	May	24	12	Diff Equation Unit 2 (B)	
10	Jun	26	—	University Practical exam.	
11	July	26	—	University Exam.	

Signature of Teachers:

Signature of HOD:

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Shri Shinde M. Y. **Class:** B.Sc-II (Sem-III)

Subject: Differential Calculus. **Paper No:** V

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	-
2	August	23	23	Tangents and Normal.	-
3	September	26	26	Curvature, Jacobian.	-
4	October	16	12	Maxima and Minima.	-
5	November	21	11	Revision, Previous year paper solving.	-

Signature of Teacher

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Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Shri Shinde M.Y. **Class:** B.Sc-III (Sem-VI)

Subject: Integral Calculus. **Paper No:** XVI

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	December	19	10	Improper integrals.	-
2	January	25	14	Improper Integrals.	-
3	February	23	11	Beta and gamma function.	-
4	March	24	11	Multiple Integrals.	-
5	April	21	11	Multiple integrals.	-
6	May	25	13	Revision, Previous year paper Solving.	-

Signature of Teacher

Signature of HOD

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Shinde M.Y. **Class:** B.Sc-I (Sem-I)

Subject: Calculus **Paper No:** II

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	-
2	August	23	21	Differentiation, Functions of two variables.	-
3	September	26	20	Reduction formulae.	-
4	October	16	09	Vector calculus.	-
5	November	21	07	Revision, previous year paper Solving.	-

Signature of Teacher

Signature of HOD

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Shinde M.Y. **Class:** B.Sc-I (Sem-II)

Subject: Geometry **Paper No:** III

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	December	19	07	Change of Axis	-
2	January	25	08	Sphere.	-
3	February	23	07	Plane.	-
4	March	24	09	Plane	-
5	April	21	06	Revision.	-
6	May	25	07	Previous Question Paper Solving.	-

Signature of Teacher

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Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sabale Nanasaheb Vasant. **Class:** B.Sc-I (Sem-I)

Subject: Algebra **Paper No:** I

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	
2	August	23	-		
3	September	26	-		
4	October	16	03	Matrices, Linear Equations	Extra lectures
5	November	21	10	Complex Number, Introduction to groups.	Extra lectures

Sabale

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Dept. of Mathematics
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Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sabale Nanasaheb Vasant. **Class:** B.Sc-II (Sem-IV)

Subject: Abstract Algebra. **Paper No:** VIII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	December	19	09	Introduction to groups.	-
2	January	25	14	Equivalence, congruence, Divisibility.	-
3	February	23	12	Groups.	-
4	March	24	10	Groups.	-
5	April	21	11	Group Homomorphism.	-
6	May	25	14	Group Homomorphism.	-

Sabale

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Dept. of Mathematics
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Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sabale Nanasaheb Vasant. **Class:** B.Sc-III (Sem-V)

Subject: Real Analysis **Paper No:** XI

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	
2	August	23	-	-	
3	September	26	-		
4	October	16	05	Set and Function.	Extra lectures
5	November	21	21	Sequences of Real number, Series of Real Number.	Extra lectures

Signature of Teacher

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Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sabale Nanasaheb Vasant. **Class:** B.Sc-III (Sem-V)

Subject: Complex Analysis. **Paper No:** X

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	
2	August	23	-		
3	September	26	-		
4	October	16	08	Analytic Functions.	Extra lectures
5	November	21	21	Complex integration, calculus of Residues.	Extra lectures

Sabale

Signature of Teacher

Signature of HOD

Dept. of Mathematics
S.S.M Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sathe Rohit Rajendra **Class:** B.Sc-II (Sem-III)

Subject: Laplace Transform **Paper No:** VI

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	
2	August	23	-		
3	September	26	-		
4	October	16	08	Laplace Transform	Extra lectures
5	November	21	11	The Inverse Laplace Transform Application of Laplace Transforms	Extra lectures

Signature of Teacher

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Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sathe Rohit Rajendra **Class:** B.Sc-II (Sem-IV)

Subject: Differential Equations **Paper No:** VII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	December	19	10	Differential equations of the first order and of degree higher than the first	-
2	January	25	11	Linear Equations of the second order	-
3	February	23	11	Removal of the first order derivative, Homogeneous linear equations	-
4	March	24	13	Equations reducible to homogeneous form	-
5	April	21	10	Total Differential Equations	-
6	May	25	11	Condition for exactness	-

Signature of Teacher

Signature of HOD

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sathe Rohit Rajendra **Class:** B.Sc-III (Sem-V)

Subject: Algebra-II **Paper No:** IX

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	
2	August	23	-		
3	September	26	-		
4	October	16	08	Introduction to Rings Quotient Rings	Extra lectures
5	November	21	10	Vector Spaces Linear Transformation and matrices Inner product space	Extra lectures

Signature of Teacher

Signature of HOD

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sathe Rohit Rajendra **Class:** B.Sc-III (Sem-V)

Subject: Partial Differential Equations **Paper No:** XII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	July			Admission Process.	
2	August	23	-		
3	September	26	-		
4	October	16	08	Linear partial differential equation of order one	Extra lectures
5	November	21	11	Non linear partial differential equation of order one Linear partial differential with constant coefficient	Extra lectures

Signature of Teacher

Signature of HOD

Dept. of Mathematics

S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr. Sathe Rohit Rajendra **Class:** B.Sc-III (Sem-VI)

Subject: Metric Spaces **Paper No:** XIII

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	December	19	09	Limits and metric spaces	-
2	January	25	11	Limit of a function	-
3	February	23	12	Continuous functions on metric spaces	-
4	March	24	13	Open sets and closed sets	-
5	April	21	10	Completeness	-
6	May	25	12	Compactness	-

Signature of Teacher

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Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr.Sabale Nanasaheb Vasant. **Class:** B.Sc-III (Sem-VI)

Subject: Numerical Analysis. **Paper No:** XIV

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	December	19	09	Finite Differences.	-
2	January	25	12	Interpolation.	-
3	February	23	11	Numerical Differentiation.	-
4	March	24	12	Numerical Differentiation.	-
5	April	21	10	Numerical Integration.	-
6	May	25	12	Numerical Integration.	-

Sabale

Signature of Teacher

Signature of HOD

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Yearly Teaching planning **Academic Year:** 2022-23

Name of Teacher: Mr.Sabale Nanasaheb Vasant. **Class:** B.Sc-III (Sem-VI)

Subject: Graph Theory. **Paper No:** XVI

Sr No.	Month	Working days	Periods Available	Teaching Topics	Remarks
1	December	19	10	Graph Theory.	-
2	January	25	13	Operations on Graph.	-
3	February	23	12	Operations on Graph.	-
4	March	24	12	Tree.	-
5	April	21	11	Tree.	-
6	May	25	13	Tree, Number Systems.	-

Sabale

Signature of Teacher

Signature of HOD

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Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Time Table-2018 – 19

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9.40 to 1.00	—	—	BSc-II (Pr) (MYS)	BSc-II (Pr) (MYS)	—	—
11.20	—	BSc-I (MYS)	—	—	—	BSc-I (TSD)
12.10	BSc-I (MYS) BSc-III (DAA)	BSc-III (DAA)	BSc-III (DAA)	BSc-III (DAA)	BSc-I (TSD) BSc-III (DAA)	BSc-III (DAA)
1.00	BSc-III (TSD)	BSc-III (TSD)	BSc-III(TSD)	BSc-I (TSD) BSc-III (MYS)	BSc-III (MYS)	BSc-III (MYS)
1.50	—	—	—	—	BSc-II (TSD)	BSc-II (TSD)
2.40	—	—	BSc-II (DAA)	BSc-II (TSD)	—	—
3.30	—	—	—	—	—	—
4.20	BSc-II (DAA)	BSc-II (DAA)	—	—	—	—
1.50 – 6.00	BSc-III (Pr) (MYS)	BSc-III (Pr) (MYS)	—	—	BSc-III (Pr) (MYS)	BSc-I (Pr) (MYS)

Teachers Name:

1) Shinde M.Y.

2)Talekar S.D

3)Dure A. A.

Head of Maths. Dept.
Shri Shivaji Mahavidyalaya
Barshi 413 401

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Time Table-2019 – 20

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9.40 to 1.00	___	___	BSc-II (Pr) (MYS)	BSc-II (Pr) (MYS)	___	___
11.20	___	BSc-I (MYS)	___	___	___	BSc-I (KAB)
12.10	BSc-I (MYS) BSc-III (SDM)	BSc-III (SDM)	BSc-III (SDM)	BSc-III (SDM)	BSc-I (KAB) BSc-III (SDM)	BSc-III (SDM)
1.00	BSc-III (KAB)	BSc-III (KAB)	BSc-III(KAB)	BSc-I (KAB) BSc-III (MYS)	BSc-III (MYS)	BSc-III (MYS)
1.50	___	___	___	___	BSc-II (KAB)	BSc-II (KAB)
2.40	___	___	BSc-II (SDM)	BSc-II (KAB)	___	___
3.30	___	___	___	___	___	___
4.20	BSc-II (SDM)	BSc-II (SDM)	___	___	___	___
1.50 – 6.00	BSc-III (Pr) (MYS)	BSc-III (Pr) (MYS)	___	___	BSc-III (Pr) (MYS)	BSc-I (Pr) (MYS)

Teachers Name:

1) Shinde M.Y.

2)Khadatare A.B.

3)Surwase D.M.

Head of Maths. Dept.
Shri Shivaji Mahavidyalaya.
Barshi 413 411

Shri Shivaji Mahavidyalaya Barshi

Department of Mathematics

Time Table-2020 – 21

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9.40 to 1.00	—	—	BSc-II (Pr) (MYS)	BSc-II (Pr) (MYS)	—	—
11.20	—	BSc-I (MYS)	—	—	—	—
12.10	BSc-I (MYS) BSc-III	BSc-III	BSc-III	BSc-III (MYS)	BSc-I BSc-III (MYS)	BSc-III (MYS)
1.00	BSc-III	BSc-III	BSc-I (MYS) BSc-III	BSc-I BSc-III	BSc-III	BSc-III
1.50	—	—	—	—	BSc-II (MYS)	BSc-II
2.40	—	—	BSc-II (MYS)	BSc-II (MYS)	—	—
3.30	—	—	—	—	—	—
4.20	BSc-II	BSc-II	—	—	—	—
1.50 – 6.00	BSc-III (Pr) (MYS)	BSc-III (Pr) (MYS)	—	—	BSc-III (Pr) (MYS)	BSc-I (Pr) (MYS)

Teachers Name:

1) Shri Shinde M. Y.

Head of Maths. Dept.
Shri Shivaji Mahavidyalaya,
Barsi, 4[illegible]

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Time Table-2021 – 22

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9.40 to 1.00	—	—	BSc-II (Pr) (MYS)	BSc-II (Pr) (MYS)	—	—
11.20	—	BSc-I (PSJ)	—	—	—	—
12.10	BSc-I (MYS) BSc-III (PSJ)	BSc-III (PSJ)	BSc-III (PSJ)	BSc-III (MYS)	BSc-I (PSJ) BSc-III (MYS)	BSc-III (MYS)
1.00	BSc-III (NVS)	BSc-III (NVS)	BSc-I (MYS) BSc-III (NVS)	BSc-I (PSJ) BSc-III (NVS)	BSc-III (NVS)	BSc-III (NVS)
1.50	—	—	—	—	BSc-II (PSJ)	BSc-II (PSJ)
2.40	—	—	BSc-II (NVS)	BSc-II (PSJ)	—	—
3.30	—	—	—	—	—	—
4.20	BSc-II (NVS)	BSc-II (NVS)	—	—	—	—
1.50 – 6.00	BSc-III (Pr) (MYS)	BSc-III (Pr) (MYS)	—	—	BSc-III (Pr) (MYS)	BSc-I (Pr) (MYS)

Teachers Name:

1) Shri Shinde M. Y.

2) Shri Sabale N. V.

3) Miss Javir P. S.

Dept. of Mathematics
S.S.M. Barshi.

Shri. Shivaji Mahavidyalaya, Brashi

Department of Mathematics

Department Timetable (2022-23)

SEM-I

Theory Timetable

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
11.20 to 12.10					B.Sc. I (MYS)	B.Sc. I (MYS)
12.10 to 01.00	B.Sc. III (NVS)	B.Sc. III (NVS)	B.Sc. III (NVS)	B.Sc. III (NVS)	B.Sc. III (NVS)	B.Sc. III (NVS)
01.00 to 01.50	B.Sc. III (RRS)	B.Sc. III (RRS)	B.Sc. I(NVS) B.Sc.III(RRS)	B.Sc. III (RRS)	B.Sc. III (RRS)	B.Sc. III (RRS)
01.50 to 02.40	B.Sc. I (NVS)	B.Sc. I (NVS)			B.Sc. II (RRS)	B.Sc. II (RRS)
02.40 to 03.30			B.Sc. II (MYS)	B.Sc. II (RRS)		
04.20 to 05.10	B.Sc. II (MYS)	B.Sc. II (MYS)				

Practical Timetable

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.40 to 01.00			B.Sc. II (MYS)	B.Sc. II (MYS)		
02.40 to 06.00	B.Sc. I (MYS)					
01.50 t0 06.00		B.Sc. III (MYS)			B.Sc. III (MYS)	

MYS	Prof. Shinde M.Y.
NVS	Mr. Sable N.V.
RRS	Mr. Sathe R.R.

HOD

Department of Mathematics

Dept. of Mathematics
S.S.M.Barshi.

Shri Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Work-Load Distribution (2018-19)

Class	Paper No.	Name of the Teacher
B. Sc .I	I – Algebra	Shri Talekar S. D.
	II - Calculus	Shri Shinde M. Y.
	III - Geometry	Shri Shinde M. Y.
	IV – Differential equation	Shri Dure A. A.
B. Sc .II	V -Differential Calculus	Shri Shinde M. Y.
	VI – Real Analysis.	Shri Talekar S. D.
	VII- Differential Equations	Shri Dure A. A.
	VIII -Abstract Algebra I	Shri Talekar S. D.
B. Sc .III	IX – Algebra II	Shri Dure A. A.
	X- Complex Analysis	Shri Talekar S. D.
	XI – Integral Calculus.	Shri Shinde M. Y.
	XII-Partial Differential Equations.	Shri Dure A. A.
	XIII-Metric Spaces	Shri Talekar S. D.
	XIV-Numerical Analysis	Shri Dure A. A.
	XV – Integral Transform.	Shri Dure A. A.
	XVI -Programming in C.	Shri Shinde M. Y.
B. ScIII	NTL- III (Practical)	Shri Shinde M. Y.
B. Sc .I	NTL- I (Practical)	Shri Shinde M. Y.
B. Sc .II	NTL- II (Practical)	Shri Shinde M. Y.

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Barshi

Shri Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Work-Load Distribution (2019-20)

Class	Paper No.	Name of the Teacher
B. Sc .I	I – Algebra	Shri Khadatare A. B.
	II - Calculus	Shri Shinde M. Y.
	III - Geometry	Shri Shinde M. Y.
	IV – Differential equation	Shri Khadatare A. B.
B. Sc .II	V -Differential Calculus	Shri Khadatare A. B.
	VI – Real Analysis.	Shri Surwase D. M.
	VII- Differential Equations	Shri Khadatare A. B.
	VIII -Abstract Algebra I	Shri Surwase D. M.
B. Sc .III	IX – Algebra II	Shri Surwase D. M.
	X- Complex Analysis	Shri Khadatare A. B.
	XI – Integral Calculus.	Shri Shinde M. Y.
	XII-Partial Differential Equations.	Shri Surwase D. M.
	XIII-Metric Spaces	Shri Surwase D. M
	XIV-Numerical Analysis	Shri Khadatare A. B.
	XV – Integral Transform.	Shri Surwase D. M.
	XVI -Programming in C.	Shri Shinde M. Y.
B. ScIII	NTL- III (Practical)	Shri Shinde M. Y.
B. Sc .I	NTL- I (Practical)	Shri Shinde M. Y.
B. Sc .II	NTL- II (Practical)	Shri Shinde M. Y.

Head of Maths. Dept.
Shri Shivaji Maha[illegible]
Barsi, [illegible]

Shri Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Work-Load Distribution (2020-21)

Class	Paper No.	Name of the Teacher
B. Sc .I	I – Algebra	Shri Shinde M. Y.
	II - Calculus	Shri Shinde M. Y.
	III - Geometry	Shri Shinde M. Y.
	IV – Differential equation	Shri Shinde M. Y.
B. Sc .II	V -Differential Calculus	Shri Shinde M. Y.
	VI – Real Analysis.	Shri Shinde M. Y.
	VII- Differential Equations	Shri Shinde M. Y.
	VIII -Abstract Algebra I	Shri Shinde M. Y.
B. Sc .III	IX – Algebra II	Shri Shinde M. Y.
	X- Complex Analysis	Shri Shinde M. Y.
	XI – Integral Calculus.	Shri Shinde M. Y.
	XII-Partial Differential Equations.	Shri Shinde M. Y.
	XIII-Metric Spaces	Shri Shinde M. Y.
	XIV-Numerical Analysis	Shri Shinde M. Y.
	XV – Integral Transform.	Shri Shinde M. Y.
	XVI -Programming in C.	Shri Shinde M. Y.
B. ScIII	NTL- III (Practical)	Shri Shinde M. Y.
B. Sc .I	NTL- I (Practical)	Shri Shinde M. Y.
B. Sc .II	NTL- II (Practical)	Shri Shinde M. Y.

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Department of Mathematics

Work-Load Distribution (2021-22)

Class	Paper No.	Name of the Teacher
B. Sc .I	I – Algebra	Miss Javir P.S.
	II - Calculus	Shri Shinde M. Y.
	III - Geometry	Shri Shinde M. Y.
	IV – Differential equation	Miss Javir P.S.
B. Sc .II	V -Differential Calculus	Shri Sabale N.V.
	VI – Laplace Transform	Miss Javir P.S.
	VII- Differential Equations	Miss Javir P.S.
	VIII -Abstract Algebra I	Shri Sabale N.V.
B. Sc .III	IX – Algebra II	Shri Shinde M. Y.
	X- Complex Analysis	Shri Sabale N.V.
	XI – Real Analysis	Shri Sabale N.V.
	XII-Partial Differential Equations.	Miss Javir P.S.
	XIII-Metric Spaces	Shri Sabale N.V.
	XIV-Numerical Analysis	Shri Sabale N.V.
	XV – Graph Theory.	Miss Javir P.S.
	XVI -Integral Calculus.	Shri Shinde M. Y.
B. ScIII	NTL- III (Practical)	Shri Shinde M. Y.
B. Sc .I	NTL- I (Practical)	Shri Shinde M. Y.
B. Sc .II	NTL- II (Practical)	Shri Shinde M. Y.

Shri. Shivaji Mahavidyalaya, Barshi

Department of Mathematics

Work-Load Distribution (2022-23)

Class	Paper No.	Name of the Teacher
B-Sc-I	I – Algebra	Shri. Sabale N.V.
	II - Calculus	Shri. Shinde M. Y.
	III - Geometry	Shri Shinde M. Y.
	IV – Differential equation	Shri. Sathe R.R.
B-Sc-II	V -Differential Calculus	Shri. Shinde M. Y.
	VI – Laplace Transform	Shri. Sathe R.R.
	VII- Differential Equations	Shri. Sathe R.R.
	VIII -Abstract Algebra-I	Shri. Sabale N.V.
B.Sc-III	IX – Algebra II	Shri. Sathe R.R.
	X- Complex Analysis	Shri. Sabale N.V.
	XI – Real Analysis	Shri. Sabale N.V.
	XII-Partial Differential Equations.	Shri. Sathe R.R.
	XIII-Metric Spaces	Shri. Sathe R.R.
	XIV-Numerical Analysis	Shri. Sabale N.V.
	XV – Graph Theory	Shri. Sabale N.V.
	XVI -Integral Calculus	Shri. Shinde M. Y.
B.Sc-III	NTL- III (Practical)	Shri. Shinde M. Y.
B.Sc-I	NTL- I (Practical)	Shri. Shinde M. Y.
B.Sc-II	NTL- II (Practical)	Shri. Shinde M. Y.

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