F.Sc Math Part-I
2 March 2021
Test No 1

Test Chapter #9
M.C.Q's

Good Luck

Khilji Academy Mananwala
Total Marks 40
Time 1hr 20M
Test No 1

(1) Two rays with a Common Starting Point form a = (a) Vector (b) Scalar (c) Angle (d) None

(2) Sexagesimal System is also Known as= (a) Circular System (b) Radian Measure (c) English System (d) None

(3) The Area of Sector of Circular region of radius r is given by (a) $r^2\theta$ (b) $2r^2\theta$ (c) $\frac{1}{2}r^2\theta$ (d) $\frac{1}{3}r^2\theta$

(4) Coterminal angles are also called (a) General angles (b) Radians (c) Degree (d) None

(5) Which Angle is Quadrantal Angle? (a) 120° (b) 270° (c) 60° (d) 45°

(6) $\cos^2 3\theta + \sin^2 3\theta =$ (a) 1 (b) 2 (c) 3 (d) 4

(7) $\frac{1}{1+\sin\theta} - \frac{1}{1-\sin\theta} =$ (a) 2 (b) 0 (c) $\frac{2}{\cos\theta}$ (d) None

(8) $1 + \cot^2\theta =$ (a) $\sec^2\theta$ (b) $\frac{1}{\sin\theta}$ (c) $\tan\theta$ (d) $\frac{1}{\sec^2\theta}$

(9) Sum of all angles in Triangle (a) 90° (b) 270° (c) 180° (d) 360°

(10) Which one is True? (a) $1 \text{ rad} < 1^\circ$ (b) $1 \text{ rad} > 1^\circ$ (c) $1 \text{ rad} = 1^\circ$ (d) None

Short Questions:- (1) Convert $54^\circ 45'$ into Radians. (2) Prove that $\sin^2\theta + \cos^2\theta = 1$. (3) If $\cot\theta = \frac{15}{8}$ and The Terminal Arm of Angle is not in quad-I, find the values of $\cos\theta$ and $\operatorname{cosec}\theta$. (4) Find Values of quadrantle Angle $-\frac{9}{2}\pi$. (5) Evaluate $\frac{\tan\frac{\pi}{3} - \tan\frac{\pi}{6}}{1 + \tan\frac{\pi}{3}\cdot\tan\frac{\pi}{6}}$

(6) Prove that $\cos^4\theta - \sin^4\theta = \cos^2\theta - \sin^2\theta$. (7) Prove that $\sec^2 A + \operatorname{cosec}^2 A = \sec^2 A \cdot \operatorname{cosec}^2 A$. (8) Prove that $\frac{\sin\theta}{1+\cos\theta} + \cot\theta = \operatorname{cosec}\theta$

(9) Prove that $\sec^2\theta - \operatorname{cosec}^2\theta = \tan^2\theta - \cot^2\theta$.

(10) Prove that $\operatorname{cosec}\theta + \tan\theta \cdot \sec\theta = \operatorname{cosec}\theta \cdot \sec^2\theta$

Long Questions:-

(11) Prove that $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = \sec\theta - \tan\theta$ (12) Prove that $\sin^3\theta - \cos^3\theta = (\sin\theta - \cos\theta)(1 + \sin\theta\cos\theta)$

Chapter NO#10
M.C.Q's

Khilji Academy
Mananwala
Total Marks 40
Total Time 1hr20M

(1) The Angles $90^\circ \pm \theta, 180^\circ \pm \theta, 270^\circ \pm \theta, 360^\circ \pm \theta$ are called
(a) Composite Angles (b) Half Angles (c) Quadrantal Angle (d) Allied Angle

(2) If α, β, γ are the angles of a Triangle Then $\tan(\alpha+\beta)+\tan\gamma =$
(a) 0 (b) 1 (c) 2 (d) None

(3) $\sin(-300^\circ) =$ (a) $-\frac{\sqrt{3}}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{2}{\sqrt{3}}$ (d) 0

(4) $\sin(\theta - \frac{\pi}{2}) =$ (a) $\cos\theta$ (b) $-\cos\theta$ (c) $\sin\theta$ (d) $\operatorname{cosec}\theta$

(5) $\sin(\frac{\pi}{2} - \theta) =$ (a) $\cos\theta$ (b) $\sin\theta$ (c) $-\cos\theta$ (d) $-\sin\theta$

(6) $\frac{\cos 11^\circ + \sin 11^\circ}{\cos 11^\circ - \sin 11^\circ} =$ (a) $\tan 11^\circ$ (b) $\cot 11^\circ$ (c) $\tan 56^\circ$ (d) $\cot 56^\circ$

(7) $\sin 2\alpha =$ (a) $2\sin\alpha\cos\alpha$ (b) $\sin\alpha$ (c) $2\cos^2\alpha - 1$ (d) $1 - 2\sin^2\alpha$

(8) $\tan\frac{\alpha}{2} =$ (a) $\pm\sqrt{\frac{1-\cos\alpha}{1-\cos\alpha}}$ (b) $\pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}$ (c) $\pm\sqrt{\frac{1-\sin\alpha}{1-\cos\alpha}}$ (d) $\pm\sqrt{\frac{1-\sin\alpha}{1+\sin\alpha}}$

(9) $\cos 3\alpha =$ (a) $4\sin^3\alpha - 3\sin\alpha$ (b) $2\cos\frac{3\alpha}{2}.\sin\frac{3\alpha}{2}$ (c) $4\cos^3\alpha - 3\cos\alpha$ (d) None

(10) $2\sin\alpha\cos\beta =$ (a) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$ (b) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$ (c) $\cos(\alpha+\beta)-\sin(\alpha-\beta)$ (d) None

Short Questions:- (1) Without Using the Table, find Values $\sin 540^\circ$.
(2) Prove that $\sin 780^\circ . \sin 480^\circ + \cos 120^\circ \sin 30^\circ = \frac{1}{2}$. (3) Prove that $\cos(\alpha+45^\circ) = \frac{1}{\sqrt{2}}(\cos\alpha - \sin\alpha)$. (4) Prove that $\frac{\sin A + \sin 2A}{1+\cos A+\cos 2A} = \tan A$.
(5) Prove that $\frac{\sin 2\alpha}{1+\cos 2\alpha} = \tan\alpha$ (6) Prove that $\sqrt{\frac{1+\sin\alpha}{1-\sin\alpha}} = \frac{\sin\frac{\alpha}{2}+\cos\frac{\alpha}{2}}{\sin\frac{\alpha}{2}-\cos\frac{\alpha}{2}}$
(7) Prove that $\cot\alpha - \tan\alpha = 2\cot 2\alpha$ (8) Express $\sin 5x + \sin 7x$ as product. (9) Express $\sin 8\theta - \sin 4\theta$ as product.
(10) Express the product as sum $2\sin 3\theta\cos\theta$.

Long Questions:-
(11) Prove that $\frac{\sin\theta+\sin 3\theta+\sin 5\theta+\sin 7\theta}{\cos\theta+\cos 3\theta+\cos 5\theta+\cos 7\theta} = \tan 4\theta$
(12) Show that $\cos 20^\circ \cos 40^\circ \cos 80^\circ = \frac{1}{8}$

F.Sc-Math-I

Date 13 March 2021

Test No 3

Test Chapter # 12

M.C.Q's

Khilji Academy Mananwala

Total Marks 40

Time 1 hr 20 M

(1) A Circle passing Through the three vertices of Triangle is called= (a) Circumcircle (b) In-Circle (c) Escribed Circle (d) both A and B

(2) With Usual Notation Circum Radius R=

(a) $\frac{\Delta}{s}$ (b) $\frac{abc}{\Delta}$ (c) $\frac{4\Delta}{abc}$ (d) $\frac{abc}{4\Delta}$

(3) The point of Intersection of Angle bisector of Triangle= (a) Circum Centre (b) In-Centre (c) Orthocentre (d) Centroid

(4) The Area of Triangle with $b=25.4$, $\alpha=45°17'$, $\gamma=36°41'$ is (a) 138.29 Sq unit (b) 110 Sq unit (c) 50 Sq. unit (d) 113 Sq. unit

(5) If Δ is the area of Triangle ABC, Then $\Delta=$ (a) $\frac{1}{2}bc.\sin\beta$ (b) $\frac{1}{2}ab\sin\gamma$ (c) $\frac{1}{2}bc\sin A$ (d) $ab\sin\alpha$

(6) $\sin\frac{\beta}{2}=$ (a) $\sqrt{\frac{s(s-c)(s-b)}{bc}}$ (b) $\sqrt{\frac{(s-c)(s-a)}{ac}}$ (c) $\sqrt{\frac{s(s-b)}{ac}}$ (d) None

(7) If $\beta=90°$, Then Law of Cosine $b^2=c^2+a^2-2ca\cos\beta$ reduces to (a) Law of Sines (b) Law of Tangent (c) pythagoras Theorem (d) None

(8) The Sum of Angles of Triangle= (a) 360° (b) 270° (c) 180° (d) 90°

(9) In Order To Solve Right Triangle, we find= (a) Two Acute Angle (b) one Acute (c) Two Abtuse (d) None

(10) Angle below the horizontal line= (a) Angle of Depression (b) Right Angle (c) Angle of Elevation (d) oblique Angle

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Short Questions:- (1) Solve the Right Triangle in which $\gamma=90°$, $\alpha=37°20'$, $a=243$. (2) Solve The Triangle ABC if $\beta=60°$, $\gamma=15°$, $b=\sqrt{6}$. (3) Find Smallest Angle of Triangle ABC when $a=37.34$, $b=3.24$, $c=35.06$. (4) Find the Area of Triangle $a=32.65$, $b=42.81$, $c=64.92$ (5) The area of Triangle is 2437. If $a=79$ and $c=97$, find β. (6) Prove that $R=\frac{abc}{4\Delta}$ (7) Show that $r=(s-a).\tan\frac{\alpha}{2}$ (8) Prove that $rr_1r_2r_3=\Delta^2$ (9) Prove that $r_1r_2r_3=rs^2$ (10) Prove that $r_2=4R.\cos\frac{\alpha}{2}\sin\frac{\beta}{2}\cos\frac{\gamma}{2}$

Long Questions:- (11) Prove that $s=4R\cos\frac{\alpha}{2}\cos\frac{\beta}{2}\cos\frac{\gamma}{2}$ (12) Solve by first Law of Tangent Then Law of Sine $a=93$, $c=101$, $\beta=80°$

F.Sc Math Part-I
Date 19 March 2021
Test No4

Test Chapter #11+14
M.C.Q's

Khilji Academy
Mananwala
Total Marks 30
Time 1hr 20M

(1) The General Solution of $1+\cos x=0$, $\forall (n\in z)$
(a) $\{n\pi\}$ (b) $\{(2n+1)\pi\}$ (c) $(2n+1)\frac{\pi}{2}$ (d) $\{2n\pi\}$

(2) If $\sin x+\cos x=0$, Then the equivalent equation=
(a) $\tan x=1$ (b) $\tan x=-1$ (c) $\sin x=0$ (d) $\cos x=0$

(3) The Number of Root of $\sin x\cos x=\frac{\sqrt{3}}{4}$, $x\in[0,2\pi]$ is
(a) 2 (b) 4 (c) Finite (d) Infinite

(4) A Trigonometric equation has Infinitely many Solutions due
(a) To Continuity (b) Periodicity (c) Discontinuity (d) Smooth Curves

(5) The Solution of $\tan x=1$
(a) $\frac{\pi}{4}$ (b) $\frac{3\pi}{4}$ (c) $\{\frac{\pi}{4},\frac{5\pi}{4}\}$ (d) $\frac{5\pi}{4}$

(6) Domain of $y=\cos x\Rightarrow$ (a) $-\infty<x<\infty$ (b) $-1\le x\le 1$ (c) z (d) N

(7) Trigonometric functions are= (a) Circular Permutation (b) Not Periodic
(c) Periodic (d) Discontinues

(8) Period of $3\sin 2x=$ (a) 6π (b) 2π (c) π (d) $\frac{\pi}{2}$

(9) Cosine is Periodic function of Period= (a) 2π (b) π (c) $\frac{\pi}{3}$ (d) $\frac{3\pi}{2}$

(10) The Graphs of Trigonometric functions are
(a) line Segments (b) Not Continous (c) Smooth Curves (d) None

Short Questions:- (1) Solve $\sin x+\cos x=0$ (2) Find the Solution Set of $\sin x\cos x=\frac{\sqrt{3}}{4}$ (3) Find the Values of θ $3\tan^2\theta+2\sqrt{3}\tan\theta+1=0$
(4) Solve the Trigonometric Equation $\operatorname{cosec}^2\theta=\frac{4}{3}$.
(5) Find Value of θ $\tan^2\theta-\sec\theta-1=0$.
(6) Find Period of $\cos 2x$. (7) Find Period of $3\cos\frac{x}{5}$.
(8) Find Period of $\cot 8x$. (9) Find Period of $\tan 4x$.
(10) Find Period of $\tan 4x$.

F Sc Math Part-I

Test Chapter#13

Total Marks 40

Total Time 1 hr 20M

Date 25 March 2021

Test #5

M.C.Qs

(1) The Inverse of a function is function if -
(a) function is onto (b) functions is into (c) function is one to one

(2) The Domain of The Principal Sine Function is=
(a) $[0, \frac{\pi}{2}]$ (b) $[-\frac{\pi}{2}, \frac{\pi}{2}]$ (c) $[0, \frac{3\pi}{2}]$ (d) $[0, 2\pi]$

(3) $y = \cos x$ is one To One in Interval=
(a) $[0, \frac{2\pi}{3}]$ (b) $[0, 2\pi]$ (c) $[0, \infty]$ (d) $[0, \pi]$

(4) Range of $y = \sin^{-1}x \Rightarrow$ (a) $-\frac{\pi}{2} \le y \le \frac{\pi}{2}$ (b) $0 \le y \le \pi$ (c) $-1 \le x \le 1$ (d) None

(5) Domain of function $y = \sin^{-1}x$ (a) $0 \le x \le 1$ (b) $-1 \ge x \ge 1$ (c) $-1 \le x \le 1$ (d) None

(6) $\tan^{-1}A + \tan^{-1}B =$ (a) $\tan^{-1}\left(\frac{A-B}{1+AB}\right)$ (b) $\tan^{-1}\left(\frac{A-B}{1-AB}\right)$ (c) $\tan^{-1}\left(\frac{2A}{1-AB}\right)$ (d) None

(7) $\cos^{-1}(-x) =$ (a) $\cos^{-1}x$ (b) $\sin^{-1}x$ (c) $\pi - \cos^{-1}x$ (d) $\sin^{-1}x$

(8) $\operatorname{Cosec}^{-1}(\sqrt{2}) =$ (a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) π

(9) $\tan^{-1}\frac{1}{2} + \tan^{-1}\frac{1}{3} =$ (a) $\frac{\pi}{6}$ (b) $\frac{\pi}{4}$ (c) $\frac{\pi}{3}$ (d) $\frac{\pi}{2}$

(10) The Graph of $y = \tan^{-1}x$ (a) Along x-axis (b) Along y-axis
(c) both a & b (d) None (10×2=20)

Short Questions:-

(1) Evaluate $\tan^{-1}(-\frac{1}{\sqrt{3}})$. (2) Evaluate $\sin^{-1}(-\frac{1}{\sqrt{2}})$.
(3) Find the Value of $\cos(\sin^{-1}\frac{1}{\sqrt{2}})$. (4) Find the Value of $\sin(\tan^{-1}(-1))$.
(5) Show that $\cos^{-1}\frac{12}{13} = \sin^{-1}\frac{5}{13}$. (6) Find the Value of $\cos^{-1}(1)$.
(7) Show that $\sin(2\cos^{-1}x) = 2x\cdot\sqrt{1-x^2}$ (8) Show that $\cos^{-1}(-x) = \pi - \cos^{-1}x$
(9) Show that $\sin^{-1}(-x) = -\sin^{-1}x$ (10) Show that $\tan(\sin^{-1}x) = \frac{x}{\sqrt{1-x^2}}$

Long Questions:- (5×2=10)

(11) Prove that $2\tan^{-1}\frac{1}{3} + \tan^{-1}\frac{1}{7} = \frac{\pi}{4}$

(12) Prove that $\sin^{-1}\frac{5}{13} + \sin^{-1}\frac{7}{25} = \cos^{-1}\frac{253}{325}$

F.Sc Math Part-I — Test Trigonometry — Total Marks 50

Date 31 March 2021 — M.C.Q's — Total Time 2hr

Test #6

(1) $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}}$ = (a) $\sec\theta+\tan\theta$ (b) $\sec\theta+\cot\theta$ (c) $\sec\theta-\tan\theta$ (d) $\frac{1-\sin\theta}{1+\sin\theta}$

(2) The Trigonometric ratios are Independent of position of
(a) Point $P(x,y)$ (b) Angle θ (c) Perpendicular (d) base

(3) An Angle whose Vertex lies on origion is called
(a) Coterminal Angle (b) Angle in Standard position (c) Allied Angle (d) Non

(4) The Angle $\theta \pm 2K\pi$ is called= (a) General (b) Allied (c) Quadrantal (d) Right

(5) The Number of Vertical Asymptotes in the graph of $y=\tan x, x\in(-\pi,\pi)$
(a) 0 (b) 1 (c) 2 (d) 3

(6) If the Terminal rays of an angle falls on any axis, The angle
(a) Allied Angle (b) Acute Angle (c) Quadrantal Angle (d) standard

(7) Range of $y=\operatorname{Cosec} x$, (a) $-1\le y\le 1$ (b) $y\ge 1$ or $y\le -1$ (c) $-\infty < y < +\infty$ (d) None

(8) Graph of Sine function is bounded between the Lines
(a) $y\pm 1=0$ (b) $x\pm 1=0$ (c) $x\pm y=0$ (d) All Correct

(9) A Triangle which is not Right Angle = (a) Oblique (b) Acute (c) obtuse

(10) Any horizontal line b/w $y=1, y=-1$ Intersects the Graph of $y=\sin x$
(a) Only one (b) Two Times (c) Infinite Times (d) At no point

Short Questions:- (1) Convert $54°45'$ into Radians (2) Prove that $\frac{\sin\theta}{1+\cos\theta}+\cot\theta=\csc\theta$

(3) Show that $\cot^4\theta+\cot^2\theta=\operatorname{cosec}^4\theta-\operatorname{cosec}^2\theta$. (4) Find Value of $\cot(-855°)$

(5) Prove that $\sin(\theta+\frac{\pi}{6})+\cos(\theta+\frac{\pi}{3})=\cos\theta$ (6) Prove that $\frac{\sin A+\sin 2A}{1+\cos A+\cos 2A}=\tan A$

(7) Find Period of $\sin\frac{x}{3}$. (8) Solve The Δ if $\beta=60°, \gamma=15°, b=\sqrt{6}$

(9) Find Value of $\csc(\tan^{-1}(-1))$. (10) Solve the equation $\sin x=\frac{1}{2}$.

Long Questions:- (11) Prove that $2\tan^{-1}\frac{1}{3}+\tan^{-1}\frac{1}{7}=\frac{\pi}{4}$.

(12) The Sides of Triangle are x^2+x+1, $2x+1$, and x^2-1. Prove that greatest Angle is $120°$. (13) Prove that $\sin(\frac{\pi}{4}-\theta).\sin(\frac{\pi}{4}+\theta)=\frac{1}{2}\cos 2\theta$

(14) Prove that $\frac{1+\cos\theta}{1-\cos\theta}=(\operatorname{Cosec}\theta+\cot\theta)^2$.

F.Sc Math Part-I

Date: 6-04-2021

Test NO 7

Test Chapter#1 to 2

M.C.Qs

Total Marks 40

Total Time 1hr 20m

Khatri Academy

(1) Every Rational Number is also a =
(a) Prime No. (b) Real No. (c) Rational Number (d) Complex no.

(2) $a, b \in \mathbb{R}$, $a=b \Rightarrow b=a$ This Property is called
(a) Transitive (b) Symmetric (c) Reflexive (d) Additive

(3) $(i)^{-\frac{21}{2}} =$
(a) i (b) $-i$ (c) 1 (d) -1

(4) If z is a Complex Number and $\bar{z}$ is a Conjugate Then $(z+\bar{z})^2$
(a) Complex Number (b) Real Number (c) Natural Number (d) None

(5) Polar form of Complex Number $x+iy=$
(a) $r\cos\theta + r\sin\theta$ (b) $r\cos\theta + ir\sin\theta$ (c) $\cos\theta + \sin\theta$ (d) $\sin\theta + i\cos\theta$

(6) The Set $\{e\}$ is called =
(a) Infinite set (b) Empty set (c) Singlten set

(7) If A and B are disjoint Sets Then $A \cap B =$
(a) 0 (b) 1 (c) 2 (d) a

(8) A Statement which is always false =
(a) Tautology (b) Contingency (c) Absurdity (d) Quantifier

(9) The Graph of function $f = \{(x,y) \mid y=mx+c\}$ is
(a) Parabola (b) Straight Line (c) Circle (d) Ellipse

(10) The Graph of Quadratic Equation
(a) line (b) Triangle (c) Parabola (d) Rectangle

Short Questions:- (1) Prove that $\frac{a}{b}+\frac{c}{d}=\frac{ad+bc}{bd}$ (2) Simplify $(-1)^{-\frac{21}{2}}$

(3) Separate into Real And Imaginary Part $\frac{(-2+3i)^2}{1+i}$.

(4) Prove that $|z_1 \cdot z_2| = |z_1| \cdot |z_2|$. (5) Prove $z\bar{z} = |z|^2$

(6) Show that $\forall z_1, z_2 \in C$, $\overline{z_1 z_2} = \bar{z}_1 \cdot \bar{z}_2$. (7) Write Power Set of $\{+, \times, -, \div\}$. (8) Construct Truth Table $P \to q \wedge P \to q$

(9) Find Inverse of $\{(1,3),(2,5),(3,7),(4,9),(5,11)\}$ and also Tell The Relation And its Inverse is a function or not.

(10) If a, b are elements of a group G, Then Show that $(ab)^{-1} = b^{-1} \cdot a^{-1}$

Long Questions:- (11) Show that the Set $\{1, w, w^2\}$, when $w^3=1$ is an abelian Group w.r.t "$\times$".

(12) Show that $\sim q \wedge (P \to q) \to \sim P$ is a Tautology.

F.Sc Math Part-I Test Chapter#3 Khilji Academy

Date 17 April 2021 M.C.Qs Total Marks 40

Test#8 Total Time 1hr20m

(1) If $A=\begin{bmatrix}1 & 3\end{bmatrix}$, $B=\begin{bmatrix}2\\4\end{bmatrix}$ Then

(a) $(A+B)^t=A^t+B^t$ (b) $(AB)^{-1}=B^{-1}A^{-1}$ (c) $(AB)^t=B^tA^t$ (d) All are Correct

(2) Rank of Matrix $\begin{bmatrix}1 & 3 & 5 & 0\end{bmatrix}$= (a) 1 (b) 2 (c) 3 (d) 4

(3) For Which Value of λ the Matrix $\begin{bmatrix}4 & \lambda & 3\\7 & 3 & 6\\2 & 3 & 1\end{bmatrix}$ is a singular Matrix

(a) $\lambda=1$ (b) $\lambda=3$ (c) $\lambda=2$ (d) $\lambda=5$

(4) Matrix Multiplication is =

(a) Commutative (b) Not Commutative (c) Associative (d) None

(5) If Matrix $\begin{bmatrix}x & 4\\2 & 8\end{bmatrix}$ is singular Then $x=$

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

(6) Identity Matrix is always

(a) Singular (b) Non-singular (c) Rectangular (d)

(7) The Value of determinant of an Identity Matrix=

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

(8) A Square Matrix is Skew Symmetric= (a) $A^t=-A$ (b) $A^t=A$ (c) $A^t=AB$ (d) None

(9) If a System has no Solution Then the System is called

(a) Consistent (b) Inconsistent (c) Unique (d) homogeneous

(10) If $A=\begin{bmatrix}x & 1\\1 & 0\end{bmatrix}$ and $A^2=I$ Then $x=$ (a) 0 (b) 1 (c) 2 (d) 3

Short Questions:- (1) If $A=\begin{bmatrix}i & 0\\1 & -i\end{bmatrix}$, Show that $A^4=I_2$. (2) Solve the System of Linear equations $\left.\begin{matrix}3x_1-x_2=1\\x_1+x_2=3\end{matrix}\right\}$. (3) Find the Matrix X if $\begin{bmatrix}5 & 2\\-2 & 1\end{bmatrix}X=\begin{bmatrix}2 & 1\\5 & 10\end{bmatrix}$. (4) Find the Inverse of $\begin{bmatrix}2i & i\\i & -i\end{bmatrix}$.

(5) Solve the Matrix Equation for A if $A\begin{bmatrix}3 & 1\\4 & 2\end{bmatrix}-\begin{bmatrix}-1 & 2\\3 & 1\end{bmatrix}=\begin{bmatrix}2 & 0\\-1 & 5\end{bmatrix}$

(6) Without Expansion Show that $\begin{vmatrix}2 & 3 & -1\\1 & 1 & 0\\2 & -3 & 5\end{vmatrix}=0$ (7) Find Value of λ if $\begin{vmatrix}1 & 2 & \lambda\\2 & \lambda & 2\\3 & 6 & \lambda\end{vmatrix}=0$

(8) Without Expansion Verify $\begin{vmatrix}bc & ca & ab\\1/a & 1/b & 1/c\\a & b & c\end{vmatrix}=0$ (9) If $A=\begin{bmatrix}1\\1+i\\i\end{bmatrix}$, find $A(\bar{A})^t$.

(10) Show that AA^t and A^tA are Symmetric for any Matrix of order 2x3.

Long Questions:- (11) Find Rank of Matrix $\begin{bmatrix}1 & -1 & 2 & -3\\2 & 0 & 7 & -7\\3 & 1 & 12 & -11\end{bmatrix}$.

(12) Show that $\begin{vmatrix}b+c & a & a^2\\c+a & b & b^2\\a+b & c & c^2\end{vmatrix}=(a+b+c)(a-b)(b-c)(c-a)$

F.Sc Math Part-I Test Chapter#4 Khilji Academy

Date 1 May 2021 M.C.Qs Total Marks 40

(Test#9) Time 1hr 20M

(1) An equation Involving Radical Expression of the Variable is
(a) Radical Equation (b) Algebric Equation (c) Exponential Eq (d) None

(2) If 'w' be the Cube Root of Unity, Then w^2=
(a) $-\frac{1-\sqrt{3}i}{2}$ (b) $\frac{1-\sqrt{3}i}{2}$ (c) 1 (d) $\frac{1+\sqrt{3}i}{2}$

(3) Both the Complex Fourth Roots of Unity are — of each other.
(a) Reciprocal (b) Conjugate (c) Additive Inverse (d) All of These

(4) If w is Cube Root of Unity, Then $w^{28}+w^{29}+1$=
(a) 0 (b) 1 (c) 2 (d) 3

(5) The Roots of $x^2+x-6=0$ are (a) Real (b) Equal (c) Complex (d) None

(6) Product of all Three Cube Roots of Unity is=
(a) 0 (b) 1 (c) −1 (d) w

(7) Three Cube Roots of 27 are= (a) 3, w, w^2 (b) −3, −3w, $3w^2$ (c) 3, 3w, $3w^2$ (d) 1, w, w^2

(8) Equation Which Remains unchanged When x Replace by $\frac{1}{x}$ is
(a) Reciprocal Equation (b) Radical Equation (c) Exponential Equation (d) None

(9) If $4^{3x}=\frac{1}{2}$, Then x= (a) $-\frac{1}{6}$ (b) −6 (c) $\frac{1}{6}$ (d) 6

(10) Equation in which Variable occurs in Exponent is called
(a) Reciprocal Equation (b) Exponential Equation (c) Radical Eq (d) None

Short Questions:-

(1) Solve the equation $x^{1/2}-x^{1/4}-6=0$ (2) Solve by factorization $\frac{a}{ax-1}+\frac{b}{bx-1}=a+b$ (3) Solve $x^{2/5}+8=6x^{1/5}$ (4) Prove that each Complex Cube Root of Unity is Square of the other. (5) Evaluate $(-1+\sqrt{-3})^5+(-1-\sqrt{-3})^5$. (6) Show that $x^3-y^3=(x-y)(x-wy)(x-w^2y)$ (7) Find the Condition that one Root of $x^2+px+q=0$ is "Double the other". (8) Discuss the Nature of Roots $2x^2-5x+1=0$ (9) If α, β are the Roots of $x^2-px-p-c=0$, prove that $(1+\alpha)\cdot(1+\beta)=1-c$ (10) Find four fourth Roots of 625.

Long Questions:-

(11) Prove that $\frac{x^2}{a^2}+\frac{(mx+c)^2}{b^2}=1$ will have equal Roots, if $c^2=a^2m^2+b^2$ (12) Solve $3x+4y=25$, $\frac{3}{x}+\frac{4}{y}=2$.