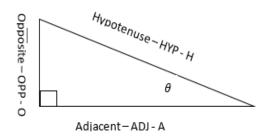
INTRODUCTION TO TRIGONOMETRY CHAPTER-8 SYNOPSIS



Expression	Ratio
$\csc \theta$	H/O
$\sec \theta$	H/A
$\cot heta$	A/O

Expression	Ratio
$\sin heta$	О/Н
$\cos \theta$	A/H
$\tan \theta$	O/A

T-ratio	00	30^{0}	450	600	900
$\sin \theta$	0	1/2	$1/\sqrt{2}$	$\sqrt{3}/2$	1
$\cos \theta$	1	$\sqrt{3}/2$	$1/\sqrt{2}$	1/2	0
$\tan \theta$	0	$1/\sqrt{3}$	1	$\sqrt{3}$	Not Defined
$\csc \theta$	Not Defined	2	$\sqrt{2}$	$2/\sqrt{3}$	1
sec θ	1	$2/\sqrt{3}$	$\sqrt{2}$	2	Not Defined

$\cot \theta$	Not Defined	$\sqrt{3}$	1	$1/\sqrt{3}$	0

TRIGNOMETRIC RATIOS OF SOME SPECIFIC ANGLES

Complementary Angle:

- $\sin \theta = \cos(90^0 \theta)$
- $\cos \theta = \sin(90^0 \theta)$
- $\tan \theta = \cot(90^0 \theta)$
- $\cot \theta = \tan(90^0 \theta)$
- $\sec \theta = \cos ec(90^0 \theta)$
- $\csc \theta = \sec(90^0 \theta)$

TRIGNOMETRIC IDENTITIES:

- 1. $sin^2\theta + cos^2\theta = 1$
- 2. $sec^2\theta$ - $tan^2\theta$ =1
- 3. $cosec^2\theta$ - $cot^2\theta$ =1

•		MCQ	level
1	?	Find the value of $\sin^2 20^\circ + \sin^2 70^\circ$ - $\tan^2 45^\circ$ a) 0 b) 1 c) 2 d) 3	С
2		If $\cos (40+x) = \sin 30$, find the value of x a) 40 b) 30 c) 20 d) 1	С
3		Evaluate sin30° cos60° + cos30° sin60° a) 0 b) 1 c) 2 d) 3	U

- -	$\sin 4A = \cos(A-2)$	(20) find the value of	of A.		U
	a)20	b)22	c) 32	d) 30	
-ක්-	If $\cos \theta = 3/5$, fi	ind the value of co	ot θ + cosec θ		U
	a) 1	b) 2	c) 3	d) 0	
	If $\cot \theta = 1/\sqrt{3}$, ev	valuate $1-\cos^2\theta$			НОТ
		2- sin ²	θ		
3	a) 2/5	b) 3/5	c) 2/√3	d) $1/\sqrt{3}$	
	If $\sin \theta = 3/5$ fin	d the value of 4 t	$an\theta + 3 \sin\theta - 6 \cos\theta$		
	a) 1	b) 0	c) -1	d) 4	
			$\theta + 2\cos\theta$		С
2	38111 0-2008 0)			
	a) 2	b)3	c) 4	d) 1	
- \$ -					U
	Find the value o	f x if cos x =			
	a) $\sqrt{3} + 1$	b) $\sqrt{3} - 1$	c) $\sqrt{3}$	d) 1- √3	
-ක්-	Find the value of	$Sec50^{\circ} \sin 40^{\circ} + \cos 40^{\circ}$	cos40° cosec50°		U
	a) 1	b) 0	c) 3	d) 2	
W S					НОТ
	Cot40+cosec	40			
>	a) 1	b) 0	c) 3	d) 2	
	cos60° cos30° +	sin 60° sin30°			HOT
<u> </u>	a) $\sqrt{3/2}$		b) 0	c) 1	
	d) 1/2			·	
	SHORT ANSW	ER TYPE			MD
	1) If tanA =	$= \frac{3}{4}$, find the value	ue of cosA.		
	2) If cosec.	$A=\sqrt{2}$ find the va	lue of tan ² A-1.		
	3) If sinA =	$=\frac{1}{2}$, find $\sin(2A)$).		
		a)20 If $\cos \theta = 3/5$, find a) 1 If $\cot \theta = 1/\sqrt{3}$, even a) 2/5 If $\sin \theta = 3/5$ find a) 1 If $\tan \theta = 4/3$, find a) 2 Evaluate $\frac{\tan \theta}{3}$ Find the value of a) 1 Find the value of a) 1 $\tan 50^{\circ} + \sec 50^{\circ} + \cot 40 + \csc 6$ a) 1 $\cot 60^{\circ} \cos 30^{\circ} + \cot 40 + \csc 6$ a) 1 SHORT ANSW 1) If $\tan A = 0$ 2) If $\csc C$	a)20 b)22 If $\cos \theta = 3/5$, find the value of $\cot \theta$ a) 1 b) 2 If $\cot \theta = 1/\sqrt{3}$, evaluate $\frac{1-\cos^2 \theta}{2-\sin^2 \theta}$ a) $2/5$ b) $3/5$ If $\sin \theta = 3/5$ find the value of $4 \cot \theta$ a) 1 b) 0 If $\tan \theta = 4/3$, find the value of $\frac{3\sin \theta}{3\sin \theta - 2\cos \theta}$ a) 2 b)3 Evaluate $\frac{\tan 45^{\circ}}{\sin 30^{\circ} + \cos 30^{\circ}}$ Find the value of x if $\cos x = \tan 3 \cot \theta$ a) 1 b) 0 Find the value of Sec50° $\sin 40^{\circ} + \cos 40^{\circ}$ cosec50° $\cot 40 + \csc 40$ a) 1 b) 0 $\frac{\tan 50^{\circ} + \sec 50^{\circ} + \cos 40^{\circ} \csc 50^{\circ}}{\cot 40 + \csc 40}$ a) 1 b) 0 $\cos 60^{\circ} \cos 30^{\circ} + \sin 60^{\circ} \sin 30^{\circ}$ a) $\sqrt{3}/2$ d) $1/2$ SHORT ANSWER TYPE 1) If $\tan A = \frac{3}{4}$, find the value of $\cot 2\theta$ if $\cot 2\theta$	If $\cos \theta = 3/5$, find the value of $\cot \theta + \csc \theta$ a) 1 b) 2 c) 3 If $\cot \theta = 1/\sqrt{3}$, evaluate $\frac{1-\cos^2 \theta}{2-\sin^2 \theta}$ a) $2/5$ b) $3/5$ c) $2/\sqrt{3}$ If $\sin \theta = 3/5$ find the value of $4 \tan \theta + 3 \sin \theta - 6 \cos \theta$ a) 1 b) 0 c) -1 If $\tan \theta = 4/3$, find the value of $\frac{3\sin \theta + 2\cos \theta}{3\sin \theta - 2\cos \theta}$ a) 2 b) 3 c) 4 Evaluate $\frac{\tan 45^{\circ}}{\sin 30^{\circ} + \cos 30^{\circ}}$ Find the value of x if $\cos x = a$ a) $\sqrt{3} + 1$ b) $\sqrt{3} - 1$ c) $\sqrt{3}$ Find the value of Sec50° $\sin 40^{\circ} + \cos 40^{\circ} \csc 50^{\circ}$ a) 1 b) 0 c) 3 $\frac{\tan 50^{\circ} + \sec 50^{\circ} + \cos 40^{\circ} \csc 50^{\circ}}{\cot 40 + \csc 40}$ a) 1 b) 0 c) 3	a)20 b)22 c) 32 d) 30 If $\cos 0 = 3/5$, find the value of $\cot 0 + \csc 0$ a) 1 b) 2 c) 3 d) 0 If $\cot \theta = 1/\sqrt{3}$, evaluate $\frac{1-\cos^2 \theta}{2-\sin^2 \theta}$ a) 2/5 b) 3/5 c) 2/√3 d) $1/\sqrt{3}$ If $\sin \theta = 3/5$ find the value of $4 \tan \theta + 3 \sin \theta - 6 \cos \theta$ a) 1 b) 0 c) -1 d) 4 If $\tan \theta = 4/3$, find the value of $\frac{3\sin \theta + 2\cos \theta}{3\sin \theta + 2\cos \theta}$ a) 2 b)3 c) 4 d) 1 Evaluate $\frac{\tan 45}{\sin 30^{\circ} + \cos 30^{\circ}}$ Find the value of x if $\cos x = a$ a) $\sqrt{3} + 1$ b) $\sqrt{3} - 1$ c) $\sqrt{3}$ d) 1- $\sqrt{3}$ Find the value of Sec50' $\sin 40^{\circ} + \cos 40^{\circ} \csc 0$ a) 1 b) 0 c) 3 d) 2 $\frac{\tan 50^{\circ} + \sec 50^{\circ} + \cos 40^{\circ} \csc 50^{\circ}}{\cot 40 + \csc 40}$ a) 1 b) 0 c) 3 d) 2 $\cos 60^{\circ} \cos 30^{\circ} + \sin 60^{\circ} \sin 30^{\circ}$ a) $\sqrt{3}/2$ b) 0 c) 1 SHORT ANSWER TYPE 1) If $\tan A = \frac{34}{4}$, find the value of $\tan^2 A - 1$.

4) Find the value of (1- sin ² 30).
5) Find the value of sin ² A x cosec ² A.
6) Find the value of cotA x sinA x secA.
7) Find the value of $\frac{tan25}{cot65}$
8) Find the value of sin50 – cos40.
9) Evaluate: sin10 x sec80 + 4tan45.
10) Evaluate: $\sin^2 26 + \sin^2 64$.
11) Evaluate: $2(\cos^2 28 - \sin^2 62)$.
12) Evaluate: sin(30+A) – cos(60-A).

A.		Very Short Answer Questions (VSA) (1 Mark)	level
1	?	Find the value of x if $\tan 3x = \sin 45^{\circ} \cos 45^{\circ} + \sin 30$	С
2		Evaluate $4 \cot^2 45^{\circ} - \sec^2 60^{\circ} + \sin^2 60^{\circ} + \cos^2 90^{\circ}$	С
3	- <u>Ö</u> -	The maximum value of $\frac{1}{\cos ec\theta}$	U
4		Prove $\frac{1-\tan^2 A}{\cot^2 A} = \tan^2 A$ where $A \neq 45^\circ$	U
5	-	Sec A =Cosec B= $\frac{7}{12}$ then A+B=	U

6		In triangle ABC right angled at B, $\tan A = 1$ Find the value of $2 \sin A \cos A$	НОТ
	<u> </u>		
B.		Short Answer Questions (SA) (2 marks)	level
7		Tan A= $\frac{5}{12}$, find the value of (Sin A + Cos A) Sec A	С
8	- <u>\$</u> -	Evaluate $5 \sin^2 30^\circ + \cos^2 45^\circ - 4 \tan^2 30^\circ$ $2 \sin 30^\circ \cos 30^\circ + \tan 45^\circ$	U
9	- <u>%</u> -	If $\sin x + \csc x = 2$, find the value of $\sin^2 x + \csc^2 x$	U
10		$\sqrt{3} \tan \theta = 3\sin \theta$ then prove that $\sin^2 \theta - \cos^2 \theta = \frac{1}{3}$	НОТ
11		Prove that $(\tan A - \tan B)^2 + (1 + \tan A \tan B)^2 = \sec^2 A \sec^2 B$	НОТ
12		$\cos 9 \ \theta = \sin \theta$, find the value of $\tan 5 \theta$	MD
C.		Long Answer Questions (LA) (3 Marks)	
13	?	Evaluate $\frac{2\cos 67^{\circ} - \tan 40^{\circ} - \cos 0^{\circ} + \tan 15^{\circ} \tan 25^{\circ} \tan 60^{\circ} \tan 65^{\circ} \tan 75^{\circ}}{\sin 23^{\circ} - \cot 50^{\circ}}$	С
14	!?	Evaluate $3 \tan 25^{\circ} \tan 40^{\circ} \tan 50^{\circ} \tan 65^{\circ} - \frac{1}{2} \tan^2 60^{\circ}$	С

		$4(\cos^2 29^{\circ} + \cos^2 61^{\circ})$	
		, , , ,	
15	W S	If $\frac{\cos \alpha}{\cos \beta} = m$ and $\frac{\cos \alpha}{\sin \beta} = n$ show that $(m^2 + n^2)\cos^2 \beta = n^2$	НОТ
		$\cos \beta \qquad \qquad \sin \beta$	
	<u> </u>		
16		$\sin(A + B) = \sqrt{3/2}$, $\cos(2A - B) = 1/\sqrt{2}$ find A and B.	U
D.		Very Long Answer Questions (VLA) (4 Marks)	
17		$\frac{\cos A}{\cos A} + \frac{\sin^2 A}{\cos A} = \sin A + \cos A$	U
1 /	17		
	4 4	$(1-\tan A) (\sin A - \cos A)$	
10	1	2 2 2 4	U
18	- Ø-	$\frac{\operatorname{cosec} A}{\operatorname{cosec} A} + \frac{\operatorname{cosec} A}{\operatorname{cosec} A} = 2 \operatorname{sec}^2 A$	U
	<u>~</u>	cosecA-1 cosecA+1	
10			**
19	-% -	Prove that $1 + \cos\theta + \sin\theta = 1 + \sin\theta$	U
	A	$1 + \cos\theta - \sin\theta$ $\cos\theta$	
20	1.1.	1	TT
20	- Ø-	Prove that $(1 + \tan^2 A) (1 + 1/\tan^2 A) = \frac{1}{\sin^2 A \cos^2 A}$	U
		Sin ACos A	
21		2 2	ЦОТ
21	17	If $\cot \theta + \tan \theta = x$ and $\sec \theta - \cos \theta = y$, prove that $(x^2 y)^{\frac{2}{3}} - (xy^2)^{\frac{2}{3}} = 1$	НОТ
	4 4		

22		Prove that $(\tan A - \tan B)^2 + (1 + \tan A \tan B)^2 = \sec^2 A \sec^2 B$	НОТ
24		If $\sec A = x + 1/4x$, prove that $\sec A + \tan A = 2x$ or $1/2x$	НОТ
25	13	Prove geometrically Sin $30^{\circ} = \frac{1}{2}$	MD

Answers

ANSWERS(MCQ)

1) 0 2) 20 3) 1 4) 22 5) 2 6) 3/5

7) 0 8) 3 9) $\sqrt{3}$ -1 10) 2 11) 2 12) $\sqrt{3}$ /2

ANSWERS(SHORT ANSWER TYPE)

1)4/5 2) 0 3) $\sqrt{3}/2$ 4) $\frac{1}{2}$ 5) 1 6)1 7)1 8)0 9)5 10) 1 11)0 12)0

SECTION A

15 2) $\frac{3}{4}$ 3) 1 5) 90° 6) 1

SECTION B

6)
$$\frac{17}{12}$$

6) $\frac{17}{12}$ 8) $\frac{5}{6}(\sqrt{3}+2)$

9) 2 12) 1

SECTION C

13) $\sqrt{3}$ 14) $\frac{3}{8}$ 16) A= 45, B=0