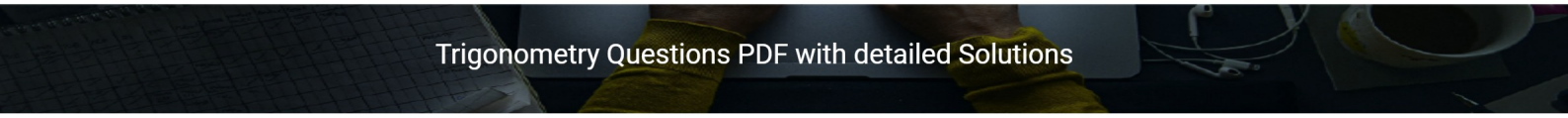

Trigonometry questions are a major type of questions asked in competitive exams. These questions carry a weightage of 3-4 questions (6-8 marks) in SSC exams. To get a good rank in competitive exams, you should have a great practice of a variety of trigonometry questions

Here are some tips for solving Trigonometry questions: Clear the basic concepts, Memorise the key ratios, Memorise the identities and formulas, practice a variety of questions, and crack the question you should have a great understanding and practice.

So, we have attached 10 questions of Trigonometry for you to practice with. You should aim to solve these questions in less than half a minute for each.

Practice Questions on Trigonometry

You can also download the Trigonometry questions and answers pdf. Just click on the **Download PDF** button. So let's start with the very first question.

Q:1 A man is standing at a distance of 60 m from the base of the tower. The top of the tower makes an angle of elevation of 45º with the man. A flag 10 m tall is fixed at the top of the tower and makes an angle of elevation of 60º with the same person. Find the height of the tower.

1. 60√3 m

2. 180 m

3. 180√3 m

4. 60 m

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) This was not an easy one! Did you get it right?

Q:2 If $\frac{tanA}{tanB} = a$ and $\frac{tanA}{secB} = b$, then what is the value of tan^2B?

1. $\frac{b^2}{(a^2-b^2)}$

2. $\frac{a^2}{(a^2-b^2)}$

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

4. $\frac{a^2}{(a^2+b^2)}$

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) In these questions, keep in mind the range of angle given in the question!

Q:3 The angle of elevation from the top of a building to two points A and B which are 60 m apart are 15° and 75°

1. 10√3 m

2. 30 m

3. 30√3 m

4. 60 m

(**Difficulty:** 2, **Estimated Time:** 10 Seconds) Do you remember some Pythagorean triplets?

Q:4 The length of the shadow of a pole is 15 meters when the sun ray's altitude is 60°. What is the height of the pole?

1. 10.5

2. 18

3. 15√3

4. 14.5

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) Should we increase the level?

Q:5 If $\frac{a\sin^2 30^0 . \cos^2 60^0}{3\tan^2 30^0 . \cot^2 45^0} = \sin^2 45^0$, then what is the value of a?

1. 2

2. 4

3. 6

4. 8

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) We're halfway through. Have you got all your questions correct so far?

Q:6 If tanθ = 7/24, then find the value of $\frac{\sec\theta + \csc\theta}{25\sin\theta + 25\cos\theta}$.

1. 23/129

2. 1

3. 25/168

4. 145/14587

(**Difficulty:** 4, **Estimated Time:** 30 Seconds) This was a test of your concepts!

Q:7 If α + β = 105° and 4α = 3β, then find the value of $\sin^2\alpha + \cos^2\beta$.

1. 3/5

2. 1/4

3. 3/8

4. 3/4

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) This was a hard nut to crack, be prepared for such questions in exam!

Q:8 If tan A = (7/8), then find the value of:

$$\frac{6\cos A + 3\sin A}{\sin A + 2\cos A}$$

1. 3

2. 0

3. 1

4. 5

(**Difficulty:** 2, **Estimated Time:** 15 Seconds) Another easy one!

Q:9 Angle of depression from a lighthouse on two boats is 30^o and 60^o. Find the distance between two boats if the height of lighthouse is $62\sqrt{3}$ meters.

1. 112 metres

2. 145 metres

3. 136 metres

4. 124 metres

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) Yes, You know how to solve such questions!

Q:10 If $\tan A - \tan^2 A = 1$, then what is the value of $\sec^8 A - 2\sec^6 A + \sec^4 A$?

1. 0

2. 1

3. 2

4. 3

(**Difficulty:** 2, **Estimated Time:** 15 Seconds) Do you remember the formulas?

Answer Key

Let's check out your score in this test.

1. (4)	**2.** (1)	**3.** (1)	**4.** (3)	**5.** (4)
6. (3)	**7.** (4)	**8.** (1)	**9.** (4)	**10.** (2)

Comment below your score, considering each question has 1 mark only. If you scored 8 to 10, congratulations! You are one step closer to selection. If you have scored 5 to 8 marks, then you are doing well, keep it up. If you have scored less than 5 marks then you need to work a little harder on this subject. But don't worry, we are here to help you master the subject.

Let's check the answers and solutions and try to find out what went wrong.

Answers and Solutions

Q:1 The correct answer is **Option 4** i.e. **60 m.**

Given,

Flag height = 10 m

Distance = b = 60 m

Tower height = x m

The angle of elevation from the person to the top of the tower = 45°

When the angle of the elevation is 45° then, the base and perpendicular distance/length is in 1 : 1

Base = distance between man and tower's foot = 60 m

So, the height of the tower is also 60 m long

Hence, the height of the tower = 60 m

Q:2 The correct answer is **Option 1** i.e. $\frac{b^2}{(a^2-b^2)}$.

Given:

$\frac{tanA}{tanB} = a$ and $\frac{tanA}{secB} = b$

Concept Used:

$sec^2A = 1 + tan^2A$

Explanation:

According to the given question,

$\frac{tanA}{tanB} = a \Rightarrow$ tanA = atanB ...(i)

Also, $\frac{tanA}{secB} = b \Rightarrow$ tanA = bsecB ...(ii)

Now, comparing and squaring both sides of equations (i) and (ii) respectively, we get

$a^2tan^2B = b^2sec^2B$

$\Rightarrow a^2tan^2B = b^2(1 + tan^2B)$

$\Rightarrow a^2tan^2B = b^2 + b^2tan^2B$

$\Rightarrow (a^2 - b^2)tan^2B = b^2$

$\Rightarrow tan^2B = \frac{b^2}{(a^2-b^2)}$

Hence, the value of tan^2B is $\frac{b^2}{(a^2-b^2)}$

Q:3 The correct answer is **option 1** i.e. **$10\sqrt{3}$ m.**

Let AB = h

In triangle ABC,

$\Rightarrow$ cot ∠ACB = BC/h

$\Rightarrow$ cot 75° = BC/h

$\therefore$ BC = h cot 75°

In triangle ABD

$\Rightarrow$ cot ∠ADB = BD/h

$\Rightarrow$ cot 15° = BD/h

∴ BD = h cot 15°

⇒ CD = BD – BC

⇒ 60 = h(cot 75° - cot 15°).....(1)

⇒ cot (75° - 15°) = (cot 75° cot 15° + 1)/(cot 75° - cot 15°)

⇒ cot 60° = (cot 75° cot (90 – 75°) + 1)/(cot 75° - cot 15°)

⇒ 1/√3 = 2/(cot 75° - cot 15°) [∵ cot (90 – 75) = tan 75° and tan x cot x = 1]

∴ (cot 75° - cot 15°) = 2√3

Putting in equation (1)

⇒ 60 = h × 2√3

∴ h = 10√3 m

Q:4 The correct answer is **Option 3** i.e.**15√3.**

Let the Height of the pole be H meter

So,

tan 60° = H/15

⇒ √3 = H/15

⇒ H = 15 √3

Hence, the height of the pole is 15√3

Q:5 The correct answer is **option 4** i.e. **8.**

Concept Used:

sin 30° = ½

sin 45° = $\frac{1}{\sqrt{2}}$

cos 60° = ½

tan 30° = $\frac{1}{3}$

cot 45° = 1

Explanation:

According to the given question,

$$\frac{a\sin^2 30^0 . \cos^2 60^0}{3\tan^2 30^0 . \cot^2 45^0} = \sin^2 45^0$$

$$\Rightarrow \frac{a . (\frac{1}{2})^2 . (\frac{1}{2})^2}{3(\frac{1}{\sqrt{3}})^2 . 1^2} = (\frac{1}{\sqrt{2}})^2$$

$$\Rightarrow \frac{a . (\frac{1}{4}) . (\frac{1}{4})}{1.1} = \frac{1}{2}$$

$$\Rightarrow \frac{a}{16} = \frac{1}{2}$$

⇒ a = 8

Hence the value of a is 8.

Q:6 The correct answer is **option 3** i.e. **25/168.**

tanθ = 7/24 = P/B

$H = \sqrt{49 + 576} = 25$

$$\Rightarrow \frac{\sec\theta + \csc\theta}{25\sin\theta + 25\cos\theta} = \frac{\frac{25}{24} + \frac{25}{7}}{25 \times \frac{7}{25} + 25 \times \frac{24}{25}}$$ = (775/168) × (1/31) = 25/168

Q:7 The correct answer is **option 4** i.e. **3/4**

ATQ;

α + β = 105°

And 4α = 3β

Or, α = (3/4)β

Or, (3β/4) + β = 105°

Or, 3β + 4β = 105° × 4

So, α = 60^o × (3/4) = 45^o

Required value = $\sin^2 45^o + \cos^2 60^o$

= $(1/\sqrt{2})^2 + (1/2)^2$ = (1/2) + (1/4) = (3/4)

Q:8 The correct answer is **option 1** i.e. **3**

$\tan A = (\sin A / cos A) = (7/8)$

Therefore, $\frac{6\cos A + 3\sin A}{\sin A + 2\cos A}$

Dividing by cos A, we get

$\frac{6+3\tan A}{\tan A+2} = \frac{69}{23} = 3$

Q:9 The correct answer is **option 4** i.e. **124 metres**

Height of light house = AB = 62√3 metres

BC = AB cot60^o = (62√3 ÷ √3) = 62 metres

BD = AB cot30^o = 62√3× √3 = 186 metres

CD = distance between two boats = 186 – 62 = 124 metres

Q:10 The correct answer is **option 2** i.e. **1.**

Given:

$\tan A - \tan^2 A = 1$

Concept Used:

$1 + \tan^2 A = \sec^2 A$

$a^2 - 2ab + b^2 = (a - b)^2$

Explanation:

According to the given question,

$\tan A - \tan^2 A = 1$

$\Rightarrow \tan A = 1 + \tan^2 A$

$\Rightarrow \tan A = \sec^2 A$ ....(i)

Now, $\sec^8 A - 2\sec^6 A + \sec^4 A$

$\Rightarrow (\sec^4 A)^2 - 2(\sec^4 A.\sec^2 A) + (\sec^2 A)^2$

$\Rightarrow (\sec^4 A - \sec^2 A)^2$

Now, from equation (i), we get

$\Rightarrow (\tan^2 A - \tan A)^2$

$\Rightarrow (-1)^2$

$\Rightarrow 1$

Hence the value of $\sec^8 A - 2\sec^6 A + \sec^4 A$ is 1.

So, this is it for today. We will meet again with another new topic. Till then, you can practice the questions again by downloading the PDF of Trigonometry.