Mishra tutorial

mishratutorial124@gmail.com

Class 10 - Mathematics

Practice paper

Maximum Marks: 100 **Time Allowed: 3 hours**

General Instructions:

- Attempt all questions
- Contact me for answer
- Contact no.9999202554

Section A

1. If $\sin\alpha = \frac{1}{\sqrt{2}}$ and tan β = 1, then the value of $\cos(\alpha + \beta)$ is **1**

a) 3 b) 1

c) 2 d) 0

2. If $\tan\theta = \frac{m}{n}$, then $\frac{m\sin\theta - n\cos\theta}{m\sin\theta + n\cos\theta}$ = **1**

a) $\frac{m^2-n^2}{m^2+n^2}$ b) $\frac{m^2+n^2}{m^2-n^2}$

c) 1 d) $\frac{n^2-m^2}{n^2+m^2}$

3. If $sin\ \theta = \frac{1}{2}$ and $cos\phi = \frac{1}{2}$, then the value of $(\theta + \phi)$ is **1**

a) 0° b) 30°

c) 90° d) 60°

4. $1 + \frac{\cot^2\alpha}{1+\text{cosec}\alpha} =$ **1**

a) sin α b) $sec\ \alpha$

c) $cosec\ \alpha$ d) $tan\ \alpha$

5. Choose the correct option. Justify your choice.(sec A + tan A) (1 – sin A) **1**

a) cos A b) sec A

c) sin A d) cosec A

6. If A and B are acute angles and sin A = cos B, then the value of (A + B) is **1**

a) 0° b) 90°

c) 30° d) 60°

7. The value of $cos\ 48° - sin\ 42°$ is **1**

a) 0 b) 1

c) $\sqrt{2}$ d) $\frac{1}{2}$

8. The value of $tan(55° - \theta) - cot(35° + \theta)$ is **1**

a) – 1 b) 0

c) $\sqrt{2}$ d) 1

9. The value of $cosec^4 A - 2\ cosec^2 A + 1$ is **1**

a) $tan^4 A$ b) $sec^4 A$

c) $coseec^4 A$ d) $cot^4 A$

10. The value of $\sin^6 A + \cos^6 A + 3\cos^2 A \sin^2 A$ is **1**

a) 0 b) – 1

c) 2 d) 1

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Section B

11. Fill in the blanks: 1

If A and B are acute angles and tan A = cot B, then the value of (A + B) is _____. 1

12. Fill in the blanks:

The value of $\sin^2 30^\circ + \cos^2 45^\circ + \cos^2 30^\circ$ is _____. 1

13. Fill in the blanks:

If A and B are acute angles and sin A = cos B, then the value of (A + B) is _____. 1

14. Fill in the blanks:

$\sec\theta$ in terms of $\sin\theta$ is _____. 1

15. Fill in the blanks:

Two angles are said to be _____ if their sum is equal to 90°. 1

16. Fill in the blanks:

If $\sin A = \frac{12}{13}$, then the value of cos A is _____. 1

17. Fill in the blanks:

The maximum value of $\frac{1}{\sec\theta}$ is _____. 1

18. Fill in the blanks:

The value of trigonometric function $\cot^2\theta - \frac{1}{\sin^2\theta} =$ _____. 1

19. Fill in the blanks:

In right angled triangle, the square of the _____ is equal to the sum of the squares of the other two sides. 1

20. Fill in the blanks:

The value of trigonometric function $\text{cosec}\ \frac{\pi}{3} =$ _____. 1

Section C

21. Match the following: 2

(a) If $\tan\theta = \sqrt{\frac{2}{3}}$, then $5sin^2\theta$	(i) 3
(b) If $\tan\theta = \sqrt{\frac{2}{3}}$, then $5cos^2\theta$	(ii) 6
(c) If $\tan\theta = \sqrt{\frac{2}{3}}$, then $3sec^2\theta$	(iii) 2
(d) If $\tan\theta = \sqrt{\frac{2}{3}}$, then $4cot^2\theta$	(iv) 5

22. Match the following 2

(a) $sin^2A + cos^2A$	(i) $\frac{1}{tan^2A}$
(b) $cosec^2A - 1$	(ii) $cosecA$
(c) $cosecA.tanA$	(iii) $sec^2A - tan^2A$
(d) $secA.cotA$	(iv) $secA$

23. Match the following: 2

(a) If $CosA = \frac{4}{5}$, then $sinA$	(i) $\frac{5}{3}$
(b) If $CosA = \frac{4}{5}$, then $tanA$	(ii) $\frac{3}{5}$
(c) If $CosA = \frac{4}{5}$, then $cotA$	(iii) $\frac{3}{4}$
(d) If $CosA = \frac{4}{5}$, then $cosecA$	(iv) $\frac{4}{3}$

24. Match the following: 2

(a) $tan(3D + 30°) = 1$	(i) 10°
(b) $sin(90° - 2A) = sin\ (A - 15°)$	(ii) 35°
(c) $sin\ 2B = 2\ sin\ B$	(iii) 5°

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(d) $tan\ 2C = cot\ (C + 60°)$	(iv) 0°

25. Match the following: 2

(a) $\frac{sin^2\ 22° + sin^2\ 68°}{cos^2\ 22° + cos^2\ 68°}$	(i) 0
(b) $cosec^2\ (90 - 22)° - tan^2\ 22° + 1$	(ii) 1
(c) $\frac{1 + tan^2\ 68°}{1 + cot^2\ 68°} - tan^2\ 68°$	(iii) 3
(d) $cosec\ 22°.sin\ 22° + 2sec\ 68°.cos\ 68°$	(iv) 2

Section D

26. State true or false: 1

The value of $\cot \frac{\pi}{3} = \frac{1}{\sqrt{3}}$.

27. State true or false: 1

If $\sin\theta - \cos\theta = 0, (0 \leqslant \theta \leqslant 90°)$ then the value of θ is 60^0.

28. State true or false: 1

"tan A" in terms of perpendicular and base is $\frac{Base}{Perpendicular}$.

29. State true or false: 1

cos A is the abbreviation used for the cosecant of $\angle A$.

30. State true or false: 1

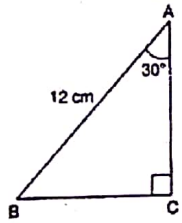
cot A is not defined for $A = 0^0$.

Section E

31. Evaluate: $4 - \frac{\sin 30° + \tan 45° - cosec 60°}{\sec 30° + \cos 60° + \cot 45°}$ 2

32. Evaluate $\sin 60° \cos 45° + \cos 60° \sin 45°$ in the simplest form. 2

33. ABC is a triangle right angled at C. If $\angle A = 30°$, AB = 12 cm, determine BC and AC. 2



34. Prove the trigonometric identity: 2

$\frac{1 - \cos A}{1 + \cos A} = (\cot A - cosec A)^2$

35. Prove that : $\sec^4\theta - \sec^2\theta = \tan^4\theta + \tan^2\theta$. 2

Section F

36. If A, B, C, are the interior angles of a ΔABC, show that $\sin \frac{B+C}{2} = \cos \frac{A}{2}$. 3

37. Verify: $\sqrt{\frac{1 - \cos\theta}{1 + \cos\theta}} = \frac{\sin\theta}{1 + \cos\theta}$, for θ=60°. 3

38. If cosec A = 2, find the value of $\frac{1}{\tan A} + \frac{\sin A}{1 + \cos A}$ 3

39. Evaluate: $\frac{\cos 58°}{\sin 32°} + \frac{\sin 22°}{\cos 68°} - \frac{\cos 38° cosec 52°}{\sqrt{3}(\tan 18° \tan 35° \tan 60° \tan 72° \tan 55°)}$ 3

40. Evaluate: $\frac{\sec 41° \sin 49° + \cos 29° \ cosec\ 61° - \frac{2}{\sqrt{3}}(\tan 20° \tan 60° \tan 70°)}{3(\sin^2 31° + \sin^2 59°)}$. 3

Section G

41. Prove the trigonometric identity: 4

$\left(\frac{1}{\sec^2\theta - \cos^2\theta} + \frac{1}{cosec^2\theta - \sin^2\theta}\right) \sin^2\theta \cos^2\theta = \frac{1 - \sin^2\theta\cos^2\theta}{2 + \sin^2\theta\cos^2\theta}$

42. If cos A - sin A = m and cos A + sin A = n. Show that: $\frac{m^2 - n^2}{m^2 + n^2}$ = -2 sin A. cos A $= -\frac{2}{\tan A + \cot A}$ 4

43. Prove the trigonometric identity: 4

$\left(\frac{1 + \sin\theta - \cos\theta}{1 + \sin\theta + \cos\theta}\right)^2 = \frac{1 - \cos\theta}{1 + \cos\theta}$

44. If 3 cot A = 4, check whether $\frac{1 - \tan^2 A}{1 + \tan^2 A} = \cos^2 A - \sin^2 A$ or not. 4

By Bablu Mishra, 9999202554

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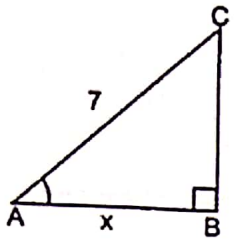
45. If $2\cos\theta - \sin\theta = x$ and $\cos\theta - 3\sin\theta = y$, prove that $2x^2 + y^2 - 2xy = 5$.

46. In $\triangle ABC$, AB = x units, AC = 7 units, and $\angle B = 90°$, cos B = 0. Evaluate : $\sqrt{7-x}\tan C + \sqrt{7+x}\cot A - 14\cos A + 21\sin C + \sqrt{49+x^2}\cos B$. 4



47. If $\operatorname{cosec}\theta + \cot\theta = p$, then prove that $\cos\theta = \frac{p^2-1}{p^2+1}$. 4

48. $\triangle RPQ$ is a triangle, right-angled at Q. If PQ = 5 cm and RQ = 10 cm, find: 4

i. sin P

ii. $\cos^2 R$ and tan R

iii. sin P × cos P

iv. $\sin^2 P - \cos^2 P$

49. If $\operatorname{cosec} A = 2$, find the value of $\frac{1}{\tan A} + \frac{\sin A}{1+\cos A}$. 4

50. If $\sec\theta = \frac{13}{5}$, show that $\frac{2\sin\theta - 3\cos\theta}{4\sin\theta - 9\cos\theta} = 3$. 4

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