INTRODUCTION TO TRIGONOMETRY

Black holes result from God dividing the universe by zero.

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☆ Multiple Choice Questions, with **only** one correct option.

Q01. If $x = r\sin\theta$ and $y = r\cos\theta$ then, the value of $x^2 + y^2$ is:

(a) r (b) r^2 (c) $\frac{1}{r}$ (d) 1

Q02. The value of $\text{cosec}70^\circ - \sec 20^\circ$ is:

(a) 0 (b) 1 (c) 90° (d) 50°

Q03. If $3\sec\theta - 5 = 0$ then, $\cot\theta$ is equal to:

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

Q04. If $\theta = 45^\circ$ then, $\sec\theta\cot\theta - \text{cosec}\theta\tan\theta$ is:

(a) 0 (b) 1 (c) $2\sqrt{2}$ (d) $\sqrt{2}$

Q05. If $\sin(90^\circ - \theta)\cos\theta = 1$ and θ is an acute angle then, θ is:

(a) 90° (b) 60° (c) 30° (d) None of these

Q06. Triangle TRY is a right angled isosceles triangle then, $\cos T + \cos R + \cos Y$ is:

(a) $\sqrt{2}$ (b) $2\sqrt{2}$ (c) $1 + 2\sqrt{2}$ (d) $1 + \frac{1}{\sqrt{2}}$

Q07. If triangles ABC and PRT are similar such that $\angle C = \angle R = 90^\circ$ and $\frac{AC}{AB} = \frac{3}{5}$ then, $\sin T$ is:

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

Q08. If $k + 7\sec^2 62^\circ - 7\cot^2 28^\circ = 7\sec 0^\circ$ then, the value of k is:

(a) 1 (b) 0 (c) 7 (d) $\frac{1}{7}$

Q09. The value of $\cot\theta - \sin(90^\circ - \theta)\cos(90^\circ - \theta)$ is:

(a) $\cot\theta$ (b) $\cos^2\theta$ (c) $\cot^2\theta$ (d) $\cot\theta\cos^2\theta$

Q10. $\dfrac{\sin\theta}{\sqrt{1-\sin^2\theta}}$ can also be written as:

(a) $\cot\theta$ (b) $\sqrt{\sin\theta}$ (c) $\dfrac{\sin\theta}{\sqrt{\cos\theta}}$ (d) $\tan\theta$

Q11. If $\dfrac{\sin^2 20^\circ+\sin^2 70^\circ}{2\left(\cos^2 69^\circ+\cos^2 21^\circ\right)}=\dfrac{\sec 60^\circ}{k}$ then, the value of k is:

(a) 1 (b) 2 (c) 3 (d) 4

Q12. $1+\tan^2\theta$ equals:

(a) $\sec\theta$ (b) $\sec^2\theta$ (c) $\sec 2\theta$ (d) $\cot^2\theta$

Q13. If $\operatorname{cosec}\theta=\dfrac{13}{12}$, then

(a) $\tan\theta=\dfrac{12}{5}$ (b) $\tan\theta=-\dfrac{5}{12}$ (c) $\tan\theta=\dfrac{12}{25}$ (d) $\tan\theta=\pm\dfrac{12}{25}$

Q14. $\cot\theta+\tan\theta$ equals:

(a) $\operatorname{cosec}\theta\sec\theta$ (b) $\sin\theta\sec\theta$ (c) $\cos\theta\tan\theta$ (d) $\sin^2\theta$

Q15. $\cos 1^\circ.\cos 2^\circ.\cos 3^\circ.....\cos 180^\circ =$ _____?

(a) 1 (b) –1 (c) 0 (d) None of these

Q16. If $\sin(A-B)=\dfrac{1}{2}$ and $\cos(A+B)=\dfrac{1}{2}$ then, A and B will be, respectively:

(a) 15º, 45º (b) 45º, 15º (c) 45º, 45º (d) 30º, 60º

Q17. If $\sin\theta+\sin^2\theta=1$, then the value of $\cos^2\theta+\cos^4\theta$ will be:

(a) 1 (b) $2\sin^2\theta$ (c) $1+2\sin^2\theta$ (d) Can't be determined

Q18. If $\sin A+\cos A=\sqrt{2}\cos(90^\circ-A)$, then $\cot A$ is equal to:

(a) $1-\sqrt{2}$ (b) $\sqrt{2}+1$ (c) $\sqrt{2}-1$ (d) $2-\sqrt{2}$

Q19. If $\sin(A-B)=0.5$, $\cos(A+B)=0.5$; $0^\circ<\angle A+\angle B\le 90^\circ$, $\angle A>\angle B$ then, values of $\angle A$ and $\angle B$ are:

(a) $\angle A=45^\circ$, $\angle B=15^\circ$ (b) $\angle A=55^\circ$, $\angle B=25^\circ$

(c) $\angle A=35^\circ$, $\angle B=25^\circ$ (d) None of these

Q20. An isosceles triangle ABC in which $AB=AC$ and $\angle B=70^\circ$ then angle A is:

(a) 30 (b) 40 (c) 70 (d) 140

Q21. If $\sin 3A=\cos(A-26^\circ)$, where 3A is an acute angle, then the value of A is:

(a) 29º (b) 15º (c) 30º (d) None of these

Q22. $\dfrac{(1+\tan^2 A)}{(1+\cot^2 A)} =$ _____?

(a) $\sec^2 A$ (b) -1 (c) $\cot^2 A$ (d) $\tan^2 A$

Q23. $\dfrac{\cos 60^\circ + \sin 60^\circ}{\cos 60^\circ - \sin 60^\circ} =$ .....:

(a) $-\sqrt{3}+2$ (b) $-2-\sqrt{3}$ (c) $\sqrt{3}-2$ (d) None of these

Q24. The value of $\tan 5^\circ \tan 10^\circ \tan 15^\circ \tan 20^\circ \tan 70^\circ \tan 75^\circ \tan 80^\circ \tan 85^\circ$ is:

(a) 0 (b) 1 (c) 2 (d) None of these

Q25. If $\sin A = \dfrac{12}{13}$, then the value of $\dfrac{13\sin A + 5\sec A}{5\tan A + 12\operatorname{cosec} A}$ will be:

(a) 9 (b) 8 (c) 4 (d) None of these

Q26. The value of $\tan 30^\circ \sin 30^\circ \cot 60^\circ \operatorname{cosec} 30^\circ$ will be:

(a) 1 (b) $\dfrac{1}{3}$ (c) $\dfrac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

Q27. If $\theta = 45^\circ$, then the value of $\cos^2\theta - \sin^2\theta$ will be:

(a) 0 (b) $-\dfrac{1}{2}$ (c) $\dfrac{1}{2}$ (d) None of these

Q28. If $\sin\theta = \cos\theta$, then the value of θ will be:

(a) 60° (b) 30° (c) 45° (d) None of these

Q29. If θ is an acute angle and $7 + 4\sin\theta = 9$, then the value of θ is:

(a) 90° (b) 30° (c) 45° (d) 60°

Q30. If θ increases from 0° to 90° then, $\sin\theta$ changes according to:

(a) from $-\infty$ to 0 (b) from 0 to 1 (c) from $-\infty$ to 1 (d) None of these

Q31. If $\sin 2A = \cos 3A$, then correct statement is:

(a) $A = 110^\circ$ (b) $A = 30^\circ$ (c) $A = 20^\circ$ (d) $A = 18^\circ$

Q32. If $\alpha + \beta = 90^\circ$ and $\alpha = 2\beta$, then $\cos^2\alpha + \sin^2\beta$ is equal to:

(a) 1 (b) $\dfrac{1}{2}$ (c) 0 (d) 2

Q33. If $A + B = 45^\circ$, the value of $(\cos A \cos B - \sin A \sin B)$ is:

(a) $\dfrac{\sqrt{3}}{2}$ (b) 0 (c) $\dfrac{1}{\sqrt{2}}$ (d) None of these

Q34. The value of θ, for $\sin 2\theta = 1$, $0^\circ < \theta < 90^\circ$ is:

(a) 60° (b) 55° (c) 45° (d) 135°

Q35. Value of $\sec^2 26^\circ - \cot^2 64^\circ$ is:

(a) 0 (b) 1 (c) –1 (d) 2

Q36. The value of $\tan 1^\circ \tan 2^\circ \tan 3^\circ ..... \tan 89^\circ$ is:

(a) 0 (b) 1 (c) –1 (d) 90

Q37. $\sqrt{1+\tan^2\theta}$ is equal to:

(a) $\cot\theta$ (b) $\cos\theta$ (c) $\text{cosec}\,\theta$ (d) $\sec\theta$

Q38. If $\alpha+\beta=90^\circ$, $\cot\beta=\frac{3}{4}$ then, $\tan\alpha$ is equal to:

(a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) $\frac{1}{4}$ (d) $\frac{1}{3}$

Q39. Maximum value of $\frac{1}{\text{cosec}\,\theta}$, $0^\circ < \theta \le 90^\circ$ is:

(a) –1 (b) 2 (c) 1 (d) Can't be determined

Q40. If $\cos\theta=\frac{1}{2}$, $\sin\beta=\frac{1}{2}$ then value of $\theta+\beta$:

(a) 30° (b) 60° (c) 90° (d) 120°

Q41. If $\sin(A+B)=1=\cos(A-B)$ then:

(a) $A=B=90^\circ$ (b) $A=B=0^\circ$ (c) $A=B=45^\circ$ (d) $A=2B$

Q42. The maximum value of $(\sin\theta+\cos\theta)$ is:

(a) 1 (b) $\sqrt{2}$ (c) 2 (d) $2\sqrt{2}$

Q43. If $\sec 4A = \text{cosec}(A-20^\circ)$, the value of A is:

(a) 25° (b) 15° (c) 22° (d) 35°

Q44. $9\sec^2 A - 9\tan^2 A =$ _____?

(a) 1 (b) 9 (c) 8 (d) 0

Q45. $\frac{1-\tan^2 45^\circ}{1+\tan^2 45^\circ} =$ ___?

(a) $\tan 90^\circ$ (b) 1 (c) $\sin 45^\circ$ (d) 0

Q46. $\cos 0^\circ =$ ____?

(a) 0 (b) 1 (c) not defined (d) None of these

Q47. $\tan x + \sin x = m$ and $\tan x - \sin x = n$, then (m^2-n^2) is equal to:

(a) $4\sqrt{mn}$ (b) $\sqrt{mn}$ (c) $2\sqrt{mn}$ (d) None of these

Q48. If $x = r\sin A\cos C$ and $y = r\sin A\sin C$ and $z = r\cos A$, then the value of $x^2+y^2+z^2$ is:

(a) $\frac{1}{r^2}$ (b) r^2 (c) $\frac{r^2}{2}$ (d) $\frac{r}{2}$

Q49. If $\sin 3\theta = 1$ then, 2θ equals:

(a) 30^o (b) 60^o (c) 45^o (d) 90^o

Q50. In a right angled triangle, one of the side lengths is 24 units, while the other one is 7 units. Also the angle between longest and shortest sides is known to be θ. Assuming that the shortest side of triangle represents its base, value of $\sin\theta$ is:

(a) $\frac{7}{24}$ (b) $\frac{24}{7}$ (c) $\frac{24}{25}$ (d) Data insufficient

ANSWERS KEY

Q01. b	Q02. a	Q03. c	Q04. a	Q05. d	Q06. a	Q07. a
Q08. b	Q09. d	Q10. d	Q11. d	Q12. b	Q13. a	Q14. a
Q15. c	Q16. b	Q17. a	Q18. c	Q19. a	Q20. b	Q21. a
Q22. d	Q23. b	Q24. b	Q25. d	Q26. b	Q27. a	Q28. c
Q29. b	Q30. b	Q31. d	Q32. b	Q33. c	Q34. c	Q35. b
Q36. b	Q37. d	Q38. a	Q39. c	Q40. c	Q41. c	Q42. b
Q43. c	Q44. b	Q45. d	Q46. b	Q47. a	Q48. b	Q49. b
Q50. c						

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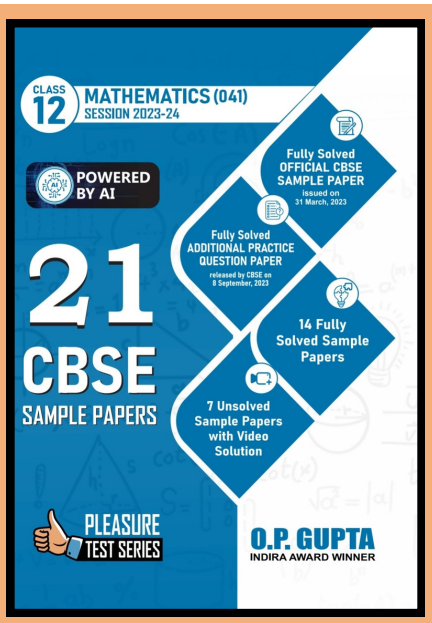

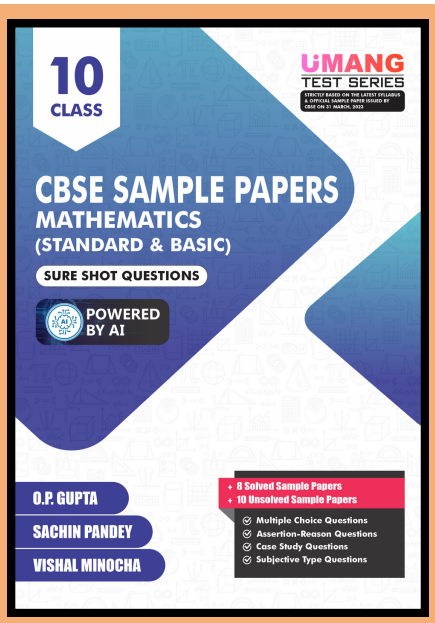

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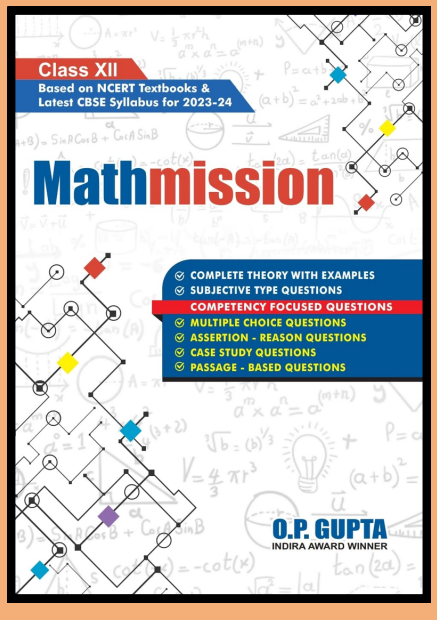

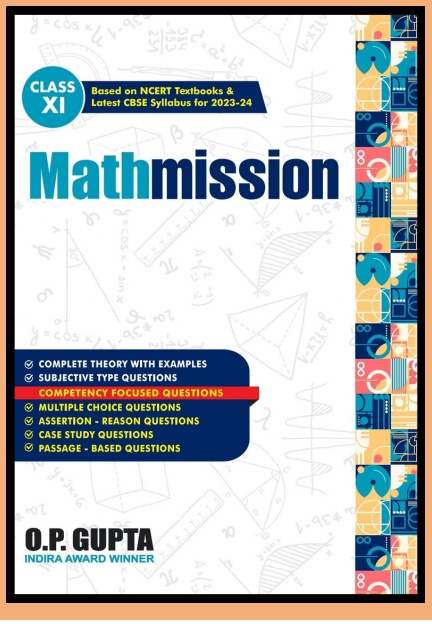

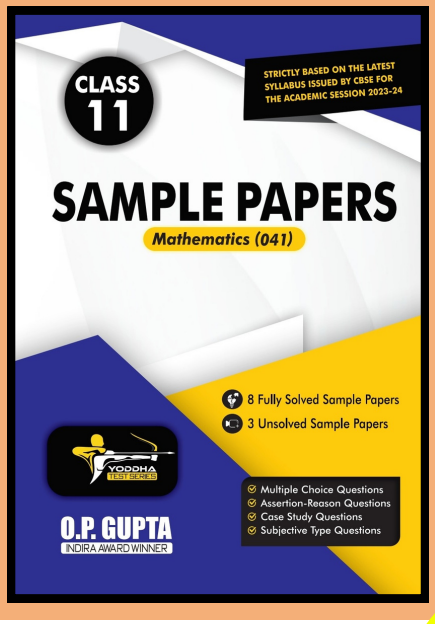

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