

PART 1 - MATHEMATICS

Topic : Inverse trigonometric functions

SECTION-A : (Maximum Marks : 12)

- This section contains **THREE** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is the correct answer.
- For each question, choose the option corresponding to the correct answer.
- Answer to each question will be evaluated according to the following marking scheme :
 Full Marks : +4 If **ONLY** the correct option is chosen;
 Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);
 Negative Marks : -1 In all other cases.

1. Considering only the principal values of the inverse trigonometric functions, the value of

$$\cot^{-1}(\cot(-11)) + 10\sin\left(2\cos^{-1}\left(\frac{1}{\sqrt{2}}\right)\right) + 10\sin(2\tan^{-1}(2))$$

is

(A) $3\pi + 7$

(B) 7

(C) $4\pi + 7$

(D) $3\pi - 5$

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2. The total number of real solutions of the equation

$$\theta = \tan^{-1}(2\tan\theta) - \frac{1}{2}\sin^{-1}\left(\frac{6\tan\theta}{9+\tan^2\theta}\right)$$

is

(Here, the inverse trigonometric functions $\sin^{-1}x$ and $\tan^{-1}x$ assume values in $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ and $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$, respectively.)

(A) 1

(B) 2

(C) 3

(D) 5

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3. Considering only the principal values of the inverse trigonometric functions, the value of

$$\tan\left(\sin^{-1}\left(\frac{3}{5}\right) - 2\cos^{-1}\left(\frac{2}{\sqrt{5}}\right)\right)$$

is

(A) $\frac{7}{24}$

(B) $\frac{-7}{24}$

(C) $\frac{-5}{24}$

(D) $\frac{5}{24}$

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Space for Rough Work

JEE ADVANCED INVERSE TRIGONOMETRIC FUNCTIONS —
PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-A																											
Ques.	1	2	3																								
Ans.	C	C	B																								