

Subject : Engineering Mathematics

DPP-06

Chapter : Calculus

Topic : Maxima And Minima

1. The minimum value of $\left(x^2 + \frac{250}{x}\right)$ is
 (a) 75 (b) 50
 (c) 25 (d) 0
2. The maximum value of $f(x) = (1 + \cos x)\sin x$ is
 (a) 3 (b) $3\sqrt{3}$
 (c) 4 (d) $\frac{3\sqrt{3}}{4}$
3. A greatest value of $f(x) = \frac{\sin 2x}{\sin\left(x + \frac{\pi}{4}\right)}$ on the interval $\left[0, \frac{\pi}{2}\right]$ is
 (a) $\frac{1}{\sqrt{2}}$ (b) $\sqrt{2}$
 (c) 1 (d) $-\sqrt{2}$
4. If $y = a \log x + bx^2 + x$ has its extremum values at $x = -1$ and $x = 2$, then
 (a) $a = -\frac{1}{2}, b = 2$ (b) $a = 2, b = -1$
 (c) $a = 2, b = -\frac{1}{2}$ (d) None of these
5. The co-ordinates of the point on the curve $4x^2 + 5y^2 = 20$ that is farthest from the point $(0, -2)$ are
 (a) $(\sqrt{5}, 0)$ (b) $(\sqrt{6}, 0)$
 (c) $(0, 2)$ (d) None of these
6. For what value of $x \left(0 \leq x \leq \frac{\pi}{2}\right)$, the function $y = \frac{x}{(1 + \tan x)}$ has a maxima?
 (a) $\tan x$ (b) 0
 (c) $\cot x$ (d) $\cos x$
7. The co-ordinates of the point on the parabola $y = x^2 + 7x + 2$ which is closest to the straight-line $y = 3x - 3$, are
 (a) $(-2, -8)$ (b) $(2, -8)$
 (c) $(-2, 0)$ (d) None of these
8. The maximum value of $\left(\frac{1}{x}\right)^x$ is
 (a) e (b) $e^{\frac{1}{e}}$
 (c) $\left(\frac{1}{e}\right)^e$ (d) None of these

Answer Key

- | | |
|--------|--------|
| 1. (a) | 5. (c) |
| 2. (d) | 6. (d) |
| 3. (c) | 7. (a) |
| 4. (c) | 8. (d) |



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