MATHEMATICS

DPP DAILY PRACTICE PROBLEMS

DPP No. 41

Total Marks : 27

Max. Time : 29 min.

Topics : Sequence & Series, Application of Derivatives

Type of Questions		M.M., Min.
Comprehension (no negative marking) Q.1 to Q.3	(3 marks, 3 min.)	[9, 9]
Single choice Objective (no negative marking) Q. 4,5	(3 marks, 3 min.)	[6, 6]
Fill in the Blanks (no negative marking) Q.6	(4 marks, 4 min.)	[4, 4]
Subjective Questions (no negative marking) Q.7,8	(4 marks, 5 min.)	[8, 10]

COMPREHENSION (Q. NO. 1 TO 3)

Consider $S_n = \dfrac{8}{5} + \dfrac{16}{65} + ... + \dfrac{8r}{4r^4 + 1}$

1. Sum of infinite terms of above series will be
(A) 0   (B) 1/2   (C) 2   (D) None of these

2. The value of S_{16} must be

(A) $\dfrac{80}{41}$ (B) $\dfrac{1088}{545}$ (C) $\dfrac{107}{245}$ (D) None of these

3. If $S_n = \dfrac{an^2 + bn}{cn^3 + dn^2 + en + 1}$, where a, b, c, d, e are independent of 'n', then

(A) a = 4, e = 2   (B) c = 0, d = 4   (C) b = 4, e = 4   (D) None of these

4. Tangent and normal to the curve y = 2 sinx + sin2x are drawn at $p\left(x = \dfrac{\pi}{3} \right)$. The area of the quadrilateral formed by the tangent, the normal and coordinate axes is.

(A) $\dfrac{\pi\sqrt{3}}{2}$ (B) $\dfrac{\pi}{2}$ (C) $\dfrac{\sqrt{3}}{2}$ (D) None of these

5. The point(s) of minimum of the function, $f(x) = 4x^3 - x \left| x - 2 \right|$, $x \in [0, 3]$ is :
(A) x = 0   (B) x = 1/3   (C) x = 1/2   (D) x = 2

6. The value of a for which the function $f(x) = (4a - 3) (x + \log 5) + 2(a - 7) \cot \dfrac{x}{2} \sin^2 \dfrac{x}{2}$ does not posses critical points is _____.

7. Find the difference between the greatest and least values of the function,

$f(x) = \cos x + \dfrac{1}{2} \cos 2x - \dfrac{1}{3} \cos 3x$.

8. Find values of a and b such that $f(x) = \dfrac{a}{x} + bx$ has a minimum at point (1, 6).

Answers Key

1. (C) **2.** (B) **3.** (A) **4.** (A)

5. (B) **6.** $(-\infty, -4/3) \cup (2, \infty)$

7. 9/4 **8.** a = b = 3