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

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

3. If $S_n = \frac{an^2+bn}{cn^3+dn^2+en+1}$, 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 = 2 (D) None of these

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

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

5. The point(s) of minimum of the function, $f(x) = 4x^3 - x|x-2|$, $x \in [0, 3]$ 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 $\frac{x}{2}$ $\sin^2\frac{x}{2}$ does not posses critical points is _____.

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

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

8. Find values of a and b such that $f(x) = \frac{a}{x} + bx$ 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.** $a = b = 3$