DAV PUBLIC SCHOOL, IFFCO, PARADEEP
CLASS-XII, SUB.MATHEMATICS
CHAPER: MAXIMA AND MINIMA
WORKSHEET(BASIC)

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(1 MARK MCQ TYPE)

1. The Maximum and minimum values of the function f(x) = 3 - 2sinx
   (A) 5 , 3   (B) 3 , 1   (C) 1 , 5   (D) 1 , 3

2. The maximum value of the function $f(x) = |x|$ is
   (A) 0   (B) 1   (C) not defined   (D) none of these

3. The maximum value of $\{x(1 - x) + 1\}^{\frac{1}{3}}$, $0 \leq x \leq 1$ is

   (A) $\left(\frac{1}{3}\right)^{\frac{1}{3}}$ (B) $\frac{1}{2}$ (C) 1   (D) 0

4. The minimum value of the function $f(x) = |x|$ is

   (A) 0   (B) 1   (C) not defined   (D) none of these

5. The absolute maximum value of $y = x^3 - 3x + 2$, $0 \leq x \leq 2$ is
   (A) 4   (B) 6   (C) 2   (D) 0

(1 MARK, FILL IN THE BLANKS BY SUITABLE ANSWER TYPE)

6. Let f have second derivative at c such that f'(c) = 0 and f''(c) > 0, then c is a point of ………..

7. The minimum value of the function $f(x) = sinx$ in $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ is ………

8. The maximum value of the function $f(x) = |x|$ in $[-2,1]$ is …………

9. Every ……..function on a closed interval has a maximum and a minimum value.

10. Every …….. function assumes its maximum/minimum value at the end points of the domain of definition of the function.

(1 MARK, ANSWER THE FOLLOWING TYPE)

11. Fnd the maximum value of sinx.cosx

12. Find the point at which the function $f(x) = |x - 2|$ is not differentable.

13. Which function assumes its maximum/minimum value at the end points of the domain of definition of the function?

14. What is critical point?

15. Find the maximum value of the function $f(x) = x^2, x \in [-3,1]$

(2 MARKS QUESTIONS, SA TYPE QUESTIONS)

16. Find the Maximum and minimum values of the function $f(x) = 2 + x - x^2$

17. Find the minimum value of $f(x) = x^3 - 3x$ in $[0,2]$

18. Find the maximum value of $f(x) = sin2x$ in $[0, \frac{\pi}{2}]$

19. Determine the point of maximum of $f(x) = sinx + cosx$ in $[0, \frac{\pi}{2}]$

20. Prove that the function $f(x) = e^{3x}$ do not possess maxima or minima.

21. Prove that the function $f(x) = 2x^3 + 3x^2 + 6x + 1$ do not possess maxima or minima.

22. Prove that the function $f(x) = x^5$ do not possess maxima or minima.

23. Find the critical points of the function $f(x) = x^3 + x^2 - 2$.

24. Find the critical points of the function $f(x) = x^3 + 3x - 2$.

25. Find the absolute maximum of the function $f(x) = x - x^2$, x in $[0,1]$

26. Find the absolute minimum of the function $f(x) = x - x^2$, x in $[0,1]$

27. Find the absolute maximum of the unction $f(x) = x - x^3$, x in $[0,1]$

28. Find the absolute minimum of the unction $f(x) = x - x^2$, x in $[0,1]$

29. Find the absolute maximum of the unction $f(x) = x^2 - 4x + 1$, x in $[0,3]$

30. Find the absolute minimum of the unction $f(x) = x^2 - 4x + 1$, x in $[0,3]$