

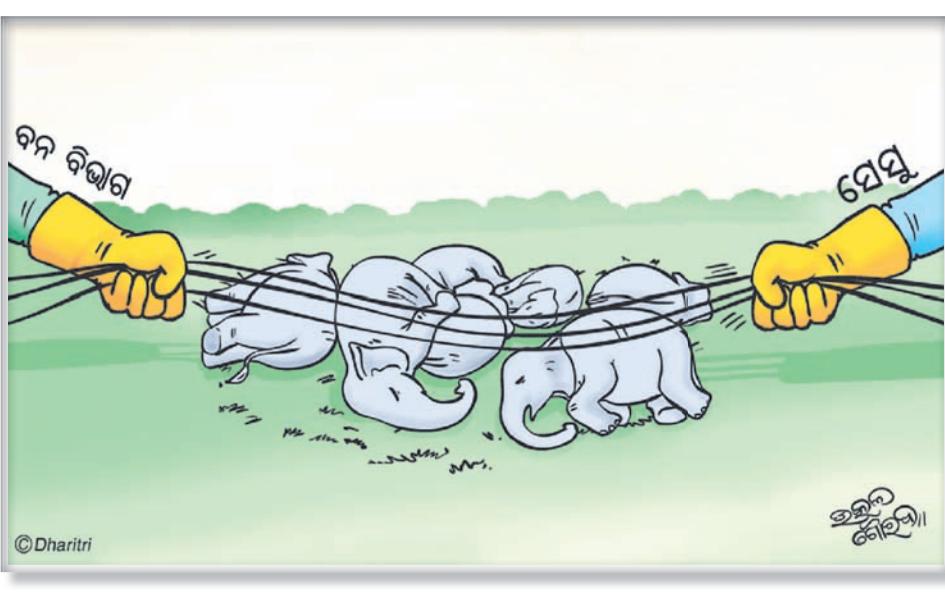
କାର୍ତ୍ତ୍ତିମନ୍

ସାମାଜିକ, ଅର୍ଥନୈତିକ, ରାଜନୈତିକ, ନ୍ୟାୟିକ ଘଟଣାବଳୀ ସହ ପରିବେଶ ଓ ଜୀବଜୀବନ ସମ୍ବନ୍ଧୀୟ ଖବର ୨୦୧୮ କୁ ଲେଖଞ୍ଚିଲ କରି ରଖିଥିଲା । ସେହିସବୁ ଘଟଣାକୁ ନେଇ ଧର୍ତ୍ତ୍ରୀର କାର୍ତ୍ତ୍ତିମନ୍ ଷେଷ ଭରପୂର ହୋଇଥିଲା । ସେଥିମଧ୍ୟ ପାଠିକାପାଠକଙ୍କୁ ଆଯୋଜିତ କଳାତଳି କିଛି ବ୍ୟଙ୍ଗତିତ୍ରକୁ ଏଠାରେ ପ୍ଲାନିଟ କରାଯାଇଛି ।

-କାର୍ତ୍ତ୍ତିମନ୍: ଉତ୍କଳ ଗୌରବ



ମଣିଷ-ଭାଲୁ ଲଡ଼େଇ





Exam Mate



Mock Test Paper for Std X, XII CBSE Board, IIT - JEE Main & Advanced.

FOR ANSWERS VISIT : www.dharitri.com

1. Let $f: R \rightarrow R$ be a positive increasing function with $\lim_{x \rightarrow \infty} \frac{f(3x)}{f(x)} = 1$. Then $\lim_{x \rightarrow \infty} \frac{f(2x)}{f(x)}$ is equal to

- (1) 1 (2) $\frac{2}{3}$
 (3) $\frac{3}{2}$ (4) 3

2. $\int \frac{\sin 4x}{(2013 + \sin 2x)^{2014}} dx$

- (1) $\frac{(1 + \sin 2x)}{2012(2013 + \sin 2x)^{2013}} + C$
 (2) $\frac{(1 - \sin 2x)}{2012(2013 + \sin 2x)^{2013}} + C$

(3) $\frac{1 + \cos 2x}{(2013 + \sin 2x)^{2013}}$

(4) None of these

3. If $f: (-1, 1) \rightarrow R$ be a differentiable function with $f(0) = -1$ and $f'(0) = 1$.

Let $g(x) = [f\{2f(x) + 2\}]^2$.

Then $g'(0)$ is equal to

- (1) 4 (2) -4
 (3) 0 (4) -2

4. Two numbers m and n are chosen at random from the numbers 1, 2, 3, 4, ..., 10. The probability that $(m^2 - n^2)$ is divisible by 3 is:

- (1) $\frac{7}{15}$ (2) $\frac{8}{15}$
 (3) $\frac{2}{7}$ (4) $\frac{5}{7}$

5. Let $f(x)$ be a polynomial of degree four having extreme values at $x = 1$ and $x = 2$. If

$$\lim_{x \rightarrow 0} \left(1 + \frac{f(x)}{x^2} \right) = 3, \text{ then } f(2) \text{ is equal to}$$

- (1) -4 (2) 0
 (3) 4 (4) -8

6. A real root of the equation $|x| e^x = 1$ lies in the interval

- (1) (-2, -1) (2) (-1, 0)
 (3) (0, 1) (4) (1, 2)

7. Let $f: R \rightarrow R$ be defined by

$$f(x) = \begin{cases} k - 2x, & \text{if } x \leq -1 \\ 2x + 3, & \text{if } x > -1 \end{cases}$$

If f has a local minimum at $x = -1$, then a possible value of k is

- (1) -1 (2) 1
 (3) 0 (4) $-\frac{1}{2}$

8. The real number k for which the equation $2x^3 + 3x + k = 0$ has two distinct real roots in $[0, 1]$

- (1) lies between 2 and 3
 (2) lies between -1 and 0
 (3) does not exist
 (4) lies between 1 and 2

9. Given $f(x) = x^3 - px + q$ where $p > 0$. Then which one of the following holds?

MOCK TEST PAPER # 2

IITJEE (Main) (MATHEMATICS)

Time : 1 hour

Maximum Marks: 120

GENERAL INSTRUCTIONS

For each question you will be given 4 Marks if you have darkened only the bubble corresponding to the correct answer and zero mark if no bubble is darkened. In all other cases, minus one (-1) Marks (NEGATIVE MARKING) will be given.

- (1) The cubic has minima at $-\sqrt{\frac{p}{3}}$ and maxima at $\sqrt{\frac{p}{3}}$

- (2) The cubic has minima at both $\sqrt{\frac{p}{3}}$ and $-\sqrt{\frac{p}{3}}$

- (3) The cubic has maxima at both $\sqrt{\frac{p}{3}}$ and $-\sqrt{\frac{p}{3}}$

- (4) The cubic has minima at $\sqrt{\frac{p}{3}}$ and maxima at $-\sqrt{\frac{p}{3}}$

10. If the integral

$$\int \frac{5 \tan x}{(\tan x - 2)} dx = x + a \ln |\sin x - 2 \cos x| + K$$

then 'a' is equal to

- (1) -1 (2) -2
 (3) 1 (4) 2

11. If $f(x) = \min\{1, x^2, x^3\}$, then $f'(1)$ is

- (1) 0 (2) 2
 (3) 3 (4) Non-existent

12. The solution to the differential equation

$$(1+y^2) + (x - e^{\tan^{-1} y}) \frac{dy}{dx} = 0 \text{ is}$$

(1) $(x-2) = ke^{-\tan^{-1} y}$

(2) $2xe^{\tan^{-1} y} = e^{2\tan^{-1} y} + k$

(3) $xe^{\tan^{-1} y} = \tan^{-1} y + k$

(4) $xe^{2\tan^{-1} y} = e^{\tan^{-1} y} + k$

13. If $f(x+y) = 2f(x)f(y)$, f is differentiable and $f(2) = 8$ then $f'(3)$ equals

- (1) 64 ($\ln 2$) (2) 128 ($\ln 2$)
 (3) 256 ($\ln 2$) (4) 1024 ($\ln 2$)

14. If $\lim_{x \rightarrow \infty} \left\{ \frac{x^2 + x + 1}{x+1} - ax - b \right\} = 4$ then

- (1) $a = 1, b = 4$ (2) $a = 1, b = -4$
 (3) $a = 2, b = -3$ (4) $a = 2, b = 3$

15. If $g(x) = 1 - x^{1/3}$ and

$(fog)(x) = 2 + 5x^{1/3} - x^{2/3} - x$, then the maximum value of $f(x)$ in $[-1, 3.5]$ is

- (1) 0 (2) 1

- (3) 5 (4) 7

16. $\lim_{n \rightarrow \infty} \sum_{r=1}^{2n} \frac{r}{\sqrt{n^2 + r^2}} \cdot \frac{1}{n}$ is equal to

- (1) $\sqrt{2} - 1$ (2) $\sqrt{5} - 1$

(1) $\frac{1}{2}[(\vec{a} \times \vec{b}) + (\vec{b} \times \vec{c}) + (\vec{c} \times \vec{a})]$

(2) $8[(\vec{a} \times \vec{b}) + (\vec{b} \times \vec{c}) + (\vec{c} \times \vec{a})]$

(3) $\frac{3}{2}[(\vec{a} \times \vec{b}) + (\vec{b} \times \vec{c}) + (\vec{c} \times \vec{a})]$

(4) $3[(\vec{a} \times \vec{b}) + (\vec{b} \times \vec{c}) + (\vec{c} \times \vec{a})]$

25. If the volume of the parallelepiped having $(\vec{a} \times \vec{b})$; and $(\vec{b} \times \vec{c})$ and $(\vec{c} \times \vec{a})$ as coterminous edges is 8 cubic units, then the volume of the parallelepiped $(\vec{b} + \vec{c}), (\vec{c} + \vec{a})$ and $(\vec{a} + \vec{b})$ is coterminous edges is

- (1) $4\sqrt{2}$ (2) 16

- (3) 64 (4) 256

26. An angle between the line

$$\vec{r} = (\hat{i} + 2\hat{j} - 3\hat{k}) + \lambda(2\hat{i} + \hat{j} - 2\hat{k}) \text{ and}$$

the plane $\vec{r} \cdot (\hat{i} + \hat{j}) + 4 = 0$, is

- (1) 0 (2) $\frac{\pi}{6}$

- (3) $\frac{\pi}{4}$ (4) $\frac{\pi}{2}$

27. The equation of a plane passing through the point (2, 2, 1) and (9, 3, 6) and perpendicular to the plane $2x + 6y + 6z - 1 = 0$ is

(1) $3x + 4y + 5z - 19 = 0$

(2) $3x + 4y - 5z + 9 = 0$

(3) $3x - 4y + 5z + 3 = 0$

(4) $3x + 4y - 5z - 9 = 0$

28. 6 girls and 5 boys sit together randomly in a row. The probability that no two boys sit together is

(1) $\frac{6!5!}{11!}$ (2) $\frac{6!6!}{11!}$

(3) $\frac{6!7!}{2!11!}$ (4) $\frac{5!7!}{2!11!}$

29. Three integers are selected at random from the first 20 integers. The probability that their product is even, is

- (1) $\frac{1}{2}$ (2) $\frac{17}{19}$

- (3) $\frac{15}{38}$ (4) $\frac{27}{38}$

30. The value of 'p' and 'q' for which the function

$$f(x) = \begin{cases} \frac{\sin(p+1)x + \sin x}{x}, & x < 0 \\ p, & x = 0 \\ \frac{\sqrt{(x+x^2)} - \sqrt{x}}{x^{3/2}}, & x > 0 \end{cases}$$

is continuous for all x in R , are

(1) $p = \frac{5}{2}, q = \frac{1}{2}$

(2) $p = -\frac{3}{2}, q = \frac{1}{2}$

(3) $p = \frac{1}{2}, q = \frac{3}{2}$

(4) $p = \frac{1}{2}, q = -\frac{3}{2}$

For Answers visit: www.dharitri.com

NATIONAL ADMISSION cum SCHOLARSHIP TEST ON 30th DECEMBER 2018

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