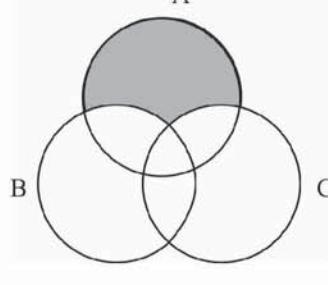




Mock Test Paper for Std X, XII CBSE Board, IIT - JEE Main & Advanced.

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1. The shaded region in the figure is:



- (A) $A \cap (B \cup C)$ (B) $A \cup (B \cap C)$
(C) $A \cap (B - C)$ (D) $A - (B \cup C)$

2. If α, β are the roots of equation $u^2 - 2u + 2 = 0$ and if $\cot\theta = x + 1$

then $\left[\frac{(x+\alpha)^n - (x+\beta)^n}{(\alpha-\beta)} \right]$ is equal to

- (A) $\frac{\sin n\theta}{\sin^n \theta}$ (B) $\frac{\cos n\theta}{\cos^n \theta}$
(C) $\frac{\sin n\theta}{\cos^n \theta}$ (D) $\frac{\cos n\theta}{\sin^n \theta}$

3. If α and β are roots of equation $x^2 - 7x - 1 = 0$ then the value of $\frac{(\alpha^{10} - \beta^{10}) - (\alpha^8 - \beta^8)}{\alpha^{(\alpha+\beta+2)} - \beta^{(\alpha+\beta+2)}}$ is equal to

- (A) 1 (B) 0
(C) 7 (D) 1/7

4. For a matrix $A = \begin{bmatrix} 1 & 2r-1 \\ 0 & 1 \end{bmatrix}$, the value of

$\prod_{t=1}^{50} \begin{bmatrix} 1 & 2r-1 \\ 0 & 1 \end{bmatrix}$ is equal to

- (A) $\begin{bmatrix} 1 & 100 \\ 0 & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & 4950 \\ 0 & 1 \end{bmatrix}$
(C) $\begin{bmatrix} 1 & 5050 \\ 0 & 1 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 2500 \\ 0 & 1 \end{bmatrix}$

5. The value of the determinant

$\begin{vmatrix} x & x+a & x+2a \\ x+1 & x+2a & x+4a \\ x+2 & x+3a & x+6a \end{vmatrix}$ is

- (A) 0 (B) $a^3 - x^3$
(C) $x^3 - a^3$ (D) $(x-a)^3$

6. In how many ways we can select of 6 persons from 6 boys and 3 girls if atleast two Boys and at least two girls must be three in the committee?

- (A) 45 (B) 55
(C) 65 (D) 75

7. Let $f(n) = \sum_{r=1}^n \binom{n}{r}^2$ then the value of $f(5)$ is equal to

- (A) 1000 (B) 1250
(C) 1750 (D) 2500

8. If $b_r = 1 - a_r$, $na = \sum_{r=1}^n a_r$, $nb = \sum_{r=1}^n b_r$,

then $\sum_{r=1}^n a_r b_r + \sum_{r=1}^n (a_r - a)^2 = \dots$

- (A) ab (B) -nab
(C) $(n+1)ab$ (D) nab

MOCK TEST PAPER # 1

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.

9. If $1 + \sum_{r=0}^{18} \{r(r+2) + 1\} r! = k!$ then k is not divisible by:
(A) 4 (B) 5
(C) 6 (D) 10
10. Let $f: R \rightarrow (0, \infty)$ be a real valued function satisfying $\int_0^x u f(x-u) du = e^{2x} - 2x - 1$, then the value of $\lim_{x \rightarrow 0} \frac{f(x)-4}{x} =$
(A) 4 (B) 6
(C) 8 (D) 10
11. Number of points where function $f(x) = \max(|\tan x|, \cos|x|)$ is non differentiable in the interval $(-\pi, \pi)$ is
(A) 4 (B) 6
(C) 3 (D) 2
12. Let $f(x) = x^3 + ax^2 + bx + 5\sin^2 x$ be an increasing function in the set of real numbers R . Then a and b satisfy the condition:
(A) $a^2 - 3b - 15 \geq 0$
(B) $a^2 - 3b + 15 \geq 0$
(C) $a^2 + 3b - 15 \leq 0$
(D) $a > 0, b > 0$
13. If $f\left(x + \frac{y}{8}, x - \frac{y}{8}\right) = xy$ then $f(m, n) + f(n, m) = 0$
(A) only when $m = n$
(B) only when $m \neq n$
(C) only when $m = -n$
(D) for all m and n
14. $\int \frac{dx}{x(\log x)(\log \log x) \dots \left(\frac{\log \log \dots x}{8 \text{ times}}\right)}$ is equal to
(A) $\left(\frac{\log \log \dots x}{8 \text{ times}}\right) + c$
(B) $\left(\frac{\log \log \dots x}{7 \text{ times}}\right) + c$
(C) $\left(\frac{\log \log \dots x}{9 \text{ times}}\right) + c$
(D) $\left(\frac{x \log \log \dots x}{9 \text{ times}}\right) + c$
15. $\int_0^{\sqrt{2}} [x^2] dx$ is equal to: (where $[]$ represent greatest integer function).
(A) $2 - \sqrt{2}$ (B) $2 + \sqrt{2}$
(C) $\sqrt{2} - 1$ (D) $\sqrt{2} - 2$
16. For non-zero vectors
 $\vec{a}, \vec{b}, \vec{c}$ $|\vec{a} \times \vec{b}| \cdot |\vec{c}| = |\vec{a}| |\vec{b}| |\vec{c}|$ holds if and only if:
(A) $\vec{a} \cdot \vec{b} = 0, \vec{b} \cdot \vec{c} = 0$
(B) $\vec{c} \cdot \vec{a} = 0, \vec{a} \cdot \vec{b} = 0$
(C) $\vec{a} \cdot \vec{c} = 0, \vec{b} \cdot \vec{c} = 0$
(D) $\vec{a} \cdot \vec{b} = \vec{b} \cdot \vec{c} = \vec{c} \cdot \vec{a} = 0$
17. The distance of the point $(1, -2, 3)$ from the plane $x - y + z - 5 = 0$, measured parallel to the line $\frac{x}{2} = \frac{y}{3} = \frac{z-1}{-6}$ is equal to
(A) 1 unit (B) 2 units
(C) 3 units (D) $\sqrt{3}$ units
18. Intersection point of the line
 $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-3}{4}$ and $\frac{x-4}{5} = \frac{y-1}{2} = \frac{z}{1}$
(A) $(1, 1, 1)$ (B) $(-1, -1, -1)$
(C) $(1, 0, 1)$ (D) $(-1, -1, 1)$
19. Three athletes A, B and C particular in a race. Both A and B have the same probability of winning the race and each is twice as likely to win as C. The probability that B or C wins the race is: (There is not tie and one must wins)
(A) $2/3$ (B) $3/5$
(C) $3/4$ (D) $13/25$
20. The area of region
 $\{(x, y) : x^2 + y^2 \leq 1 \leq x + y\}$ is:
(A) $\frac{\pi^2}{5}$ sq. units (B) $\frac{\pi^2}{2}$ sq. units
(C) $\frac{\pi^2}{4}$ sq. unit (D) $\left(\frac{\pi}{4} - \frac{1}{2}\right)$ sq. unit
21. The solution of the differential equation
 $\frac{dy}{dx} + \frac{2yx}{1+x^2} = \frac{1}{(1+x^2)^2}$ is:
(A) $y(1+x^2) = c + \tan^{-1} x$
(B) $\frac{y}{(1+x^2)} = c + \tan^{-1} x$
(C) $y \log(1+x^2) = c + \tan^{-1} x$
(D) $y(1+x^2) = c + \tan^{-1} x$
22. The gradient of common chord of the circles $x^2 + y^2 - 3x - 4y + 5 = 0$ and $3x^2 + 3y^2 - 7x + 8y + 11 = 0$ is
(A) $\frac{1}{3}$ (B) $-\frac{1}{10}$
(C) $-\frac{1}{2}$ (D) $-\frac{2}{3}$
23. A ray of light passing through at point $(1, 2)$ is reflected on the x-axis is point P and passes through the point $(5, 3)$. Then the abscissa of the point P is:
(A) -3 (B) $\frac{13}{3}$
(C) $\frac{13}{5}$ (D) $\frac{13}{4}$
24. The radius of the circle passing through the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$, and having its centre at $(0, 3)$ is
(A) 4 (B) 3
(C) $\sqrt{12}$ (D) $\frac{7}{2}$
25. The ends of a line segment are P(1, 3) and Q(1, 1), R is a point on the line segment PQ such that $PR : QR = 1 : \lambda$. If R is an interior point of the parabola $y^2 = 4x$, then complete values of λ is given by:
(A) $\lambda \in (0, 1)$ (B) $\lambda \in \left(-\frac{3}{5}, 1\right)$
(C) $\lambda \in \left(\frac{1}{2}, \frac{3}{5}\right)$ (D) $\lambda \in \left(-\frac{3}{5}, 1\right)$
26. If $x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$, then the value of
 $\tan^{-1}\left(\frac{\tan x}{4}\right) + \tan^{-1}\left(\frac{3 \sin 2x}{5 + 3 \cos 2x}\right)$ is
(A) $\frac{x}{2}$ (B) $2x$
(C) $3x$ (D) x
27. The number of integral values of m , for which the x-coordinate of the point of intersection of the lines $3x + 4y = 9$ and $y = mx + 1$ is also an integer is
(A) 2 (B) 0
(C) 4 (D) 1
28. Mean of 100 items is 49. It was discovered that three item which should have been 60, 70, 80 were wrongly read as 40, 20, 50 respectively. The correct mean is:
(A) 48 (B) 82
(C) 50 (D) 80
29. If $\sin \theta = -\frac{4}{5}$ and θ lies in the third quadrant, then $\cos \frac{\theta}{2}$ is equal to:
(A) $\frac{1}{\sqrt{5}}$ (B) $-\frac{1}{\sqrt{5}}$
(C) $\frac{\sqrt{2}}{5}$ (D) $-\frac{\sqrt{2}}{5}$
30. Consider:
Statement-1: $(p \wedge \sim q) \wedge (\sim p \wedge q)$ is a fallacy.
Statement-2: $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$ is a tautology.
(A) Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1
(B) Statement 1 is true, Statement 2 is false.
(C) Statement 1 is false, statement 2 is true.
(D) Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1.

For Answers visit: www.dharitri.com



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ଚମ୍ପାଆରେ ଖୋଲିବ
ଆହାର କେଣ୍ଠ

ଚମ୍ପାଆ, ୧୪୧୯(ଡି.ଏନ.ଏ.)

ଚମ୍ପାଆ ଏନ.୧.ସିରେ ଆହାର କେଣ୍ଠ
ଖୋଲିବ ଦବିଶେଷର ପୁଣି ହେବାକୁ
ଯାଇଛି । ସବକାରକ ପକ୍ଷର ଜାନ୍ମାଯାରା
୨୭ରେ ଖୋଲାଯିବ ବୋଲି ଏକପ୍ରକାର
ପ୍ରିତି ହୋଇଥିବ ଜଣାଯାଉଛି । ଅୟାମୀ
ଭାବେ ଏହା ଖୋଲାଯିବ ପରେ ନ ମାସ
ମଧ୍ୟରେ ଖ୍ଵାସ ଖ୍ଵାସ ବିଶ୍ଵାସ କରାଯାଇ
କାର୍ଯ୍ୟକାରୀ କରାଯିବ ବୋଲି ନିର୍ବାହୀ
ଅଧିକାରୀ ସମନ କୁମାର ସାହୁ ଦୂରନ୍ତା
ଦେଇଛନ୍ତି । ଚମ୍ପାଆ ମାଛ ମାର୍ଗେ
ନିକଟରେ ବଦ ଥିବ ଜମ୍ବୁଆଳ କେବୁ
ଅର୍ଥିତ୍ ଗୁରୁତ୍ୱ ଅୟାମୀ ଭାବେ ଖୋଲା
ଯିବ ପରେ ଉଚ୍ଚ କେନ୍ଦ୍ର ବଦସ୍ଥାଷ୍ଟାରେ
ନିମାଂଶ କରାଯିବ ବୋଲି ଜଣାଯାଉଛି ।

ଜବକାର୍ତ୍ତ ଦେଖାଇ ପ୍ରତିବାଦ

କେଳକୋଇ, ୧୪୧୯(ଡି.ଏନ.ଏ.)

କେଳକୋଇ କୁଳରେ
ଏମଙ୍ଗିନ୍ଥାରରଜିଏସ କାର୍ଯ୍ୟ ମେନ୍ଡିନ
ବ୍ୟାର କରାଯାଉଛି । ଜବକାର୍ତ୍ତଧାରୀଙ୍କୁ
ଶହେ ଦିନର କାର୍ଯ୍ୟ ମନ୍ତ୍ରୀନି । ଏ ନେଇ
ଶିବନାରାୟଣପୁର ଗୋଡ଼ା ପଞ୍ଚାଯତ
କାର୍ଯ୍ୟକାରୀ ସମ୍ପଦରେ ଶୁଭ୍ରବାର
ଜବକାର୍ତ୍ତଧାରୀ ବିଶେଷ କରିଥିଲେ ।
ଖ୍ଵାସ ବିଶ୍ଵାସ ଏ ନେଇ ଏକ ଲିଙ୍ଗର
ଅଭିଯାନ କରାଯାଉଛି । ଉଚ୍ଚ ପଞ୍ଚାଯତରେ
୨୦୧୭-୧୮ ରେ ୪୭ ଲକ୍ଷ ଉଚ୍ଚ କଙ୍କା
ବ୍ୟାଯରେ ଏମଙ୍ଗିନ୍ଥାରରଜିଏସ ଯୋଗନା

■ମେନ୍ଡିନ କରୁଛି ସନ୍ଦୂର କାର୍ଯ୍ୟ

■ଜବକାର୍ତ୍ତଧାରୀଙ୍କୁ ମିଳିବି କାମ



କାର୍ତ୍ତ ଦେଖାଇ ଶୁଭ୍ରବାର କରୁଛନ୍ତି ।

ଜିଲ୍ଲାହୁରୀୟ ବିଜ୍ଞାନମେଳା ଉଦ୍ୟାଚିତ୍ତ

ପ୍ରକଳ୍ପ ମୁଲି ଦେଖିଥୁଲେ ଛାତ୍ରିକାତ୍ର



ଉଦ୍ୟାଚିତ୍ ବିବରଣୀ ଯୋଗ ଦେଇଥିବା ଅନ୍ତିମ ।

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