MATHS

BOOKS - CAREER POINT

MOCK TEST 8

Part C Maths

1. A speaks truth in 605 cases and B speaks truth in 70% cases. The probability that they will say the same thing while describing a single event is $2/19$ b. $3/29$ c. $17/19$ d. $4/29$

A. 0.56

B. 0.54

C. 0.38

D. 0.94

Answer: B

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2. the total number of ways of selecting two number from the set {1,2,3,4,.....3n} so that their sum divisible by 3 is equal to -

A. $\frac{2n^2 - n}{2}$

B. $\frac{3n^2 - n}{2}$

C. $2n^2 - n$

D. $3n^2 - n$

Answer: B

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3. $(\underset{\text{n-digits}}{666\ldots.6})^2 + (\underset{\text{n-digits}}{888\ldots.8})$ is equal to

A. $\frac{4}{9}(10^n - 1)^2$

B. $\frac{4}{9}(10^n - 1)$

C. $\frac{4}{9}(10^{2n} - 1)$

D. $\frac{4}{9}(10^{2n} - 1)^2$

Answer: C

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4. if a,b,cgt 0 and are p^{th}, q^{th}, r^{th} term of a G,P respectivelt then

$$\begin{vmatrix} \log a^2, p-1 & 3 \\ \log b^4, 2(q-1) & 6 \\ \log c^8, 4(r-1) & 12 \end{vmatrix}$$ is equal to -

A. -1

B. 1

C. 0

D. none of these

Answer: C

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5. If zis a complex number, then $|3z-1|=3|z-2|$ represents

A. x=0

B. $x^2+y^2=3x$

C. y=0

D. x=7/6

Answer: D

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6. If the roots of the equation $(b-c)x^2+(c-a)x+(a-b)=0$ are equal then a, b, c will be in

A. A,P

B. G.P

C. H.P

D. none of these

Answer: A

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7. $\lim_{a\to\infty}\left(\sin\frac{\pi}{2n}\sin\frac{2\pi}{2n}\sin\frac{3\pi}{2n}\ldots\ldots\sin\frac{(n-1)\pi}{n}\right)^{1/n}$ is equal to -

A. $\frac{1}{2}$

B. $\frac{1}{3}$

C. $\frac{1}{4}$

D. none of these

Answer: A

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8. the area included between the curve $xy^2 = a^2(a - x)$ and y - axis is -

A. $\frac{\pi a^2}{2}$

B. $2\pi a^2$

C. πa^2

D. None of these

Answer: C

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9. The solution (x+y+1) dy =dx are-

A. $x + y + 2 = Ce^y$

B. $x + y + 4 = C \log y$

C. $\log(x + y + 2) = Cy$

D. none of these

Answer: A

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10. If two distinct chords, drawn from the point (p, q) on the circle $x^2 + y^2 = px + qy$ (where $pq \neq q$) are bisected by the x-axis, then $p^2 = q^2$ (b) $p^2 = 8q^2$ $p^2 < 8q^2$ (d) $p^2 > 8q^2$

A. $p^2 = q^2$

B. $p^2 = 8q^2$

C. $p^2 < 8q^2$

D. $p^2 > 8q^2$

Answer: D

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11. if $\frac{\tan\alpha - i\left(\sin\frac{\alpha}{2} + \cos\frac{\alpha}{2}\right)}{1 + 2i\sin\frac{\alpha}{2}}$ is purely imaginary then α is given by -

A. $n\pi + \frac{\pi}{4}$

B. $n\pi = \frac{\pi}{4}$

C. $(2n+1)\pi$

D. $2n\pi + \frac{\pi}{4}$

Answer: A

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12. If the point $x_1 + t(x_2 - x_1), y_1 + t(y_2 - y_1)$ divides the join of (x_1, y_1) and (x_2, y_2) internally then locus of t is

A. tlt0

B. 0lttlt1

C. tgt1

D. t=1

Answer: B

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13. A common tangent to $9x^2 - 16y^2 = 144$ and $x^2 + y^2 = 9$, is

A. $y = \frac{3}{\sqrt{3}}X + \frac{15}{\sqrt{7}}$

B. $y = 3\sqrt{\frac{2}{7}}x + \frac{15}{\sqrt{7}}$

C. $y = 2\sqrt{\frac{3}{7}}x + 15\sqrt{7}$

D. None of these

Answer: B

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14. $f(x) = [x] + \left[x + \frac{1}{3}\right] + \left[x = \frac{2}{3}\right] \forall x \in R,$ where [.] is G.I.F then number of points of discontiuity of f(x) in $[-1, 1]$ is /are

A. 5

B. 4

C. 7

D. none of these

Answer: D

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15. Domain of f $(x) = \frac{1}{[X]} + \sqrt{(2-x)x}$ is equal to (if [x] denotes the greastest integer function]

A. [0,2]

B. [0.1]

C. [1,2]

D. [1,3]

Answer: C

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16. Line 3x + 2y =24 meets x-axis at A and y- axis at B and perpending bisector of AB meets the line passing through (0,1) and parallel to x-axis at C. Area of ΔABC is

A. 182 sq units

B. 91 sq units

C. 48 sq units

D. none of these

Answer: C

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17. The area of the triangle whose vertices are

$A(1, -1, 2), B(2, 1-1)C(3, -1, 2)$ is .....

A. $\sqrt{17}$

B. 13

C. $\sqrt{13}$

D. None of these

Answer: B

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18. Find the derivative of $f(\tan x)$ w.r.t. $g(\sec x)$ at $x = \frac{\pi}{4}$, where $f'(1) = 2$ and $g'\left(\sqrt{2}\right) = 4$.

A. $\sqrt{2}$

B. $\frac{1}{\sqrt{2}}$

C. 1

D. none of these

Answer: B

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19. G is the centroid of triangle ABC and A_1 and B_1 are the midpoints of sides AB and AC respectively .If Δ_1 be the area of quandrillateral Δ / Δ_1 is equal to -

A. 3/2

B. 3

C. 43468

D. none of these

Answer: D

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20. The three vectors $\hat{i}+\hat{j}, \hat{j}+\hat{k}, \hat{k}+\hat{i}$ taken two at a time form three planes. The three unit vectors drawn perpendicular to these three planes form a parallelopiped of volume.

A. 43468

B. 4

C. $\left(3\sqrt{3}\right)4$

D. $4/\left(3\sqrt{3}\right)$

Answer: C

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21. If $\tan 4\theta = \cot 3\theta$, then general value of θ-

A. $(2n+1)\frac{\pi}{14}, n \neq 3k$

B. $(2n+1)\frac{\pi}{6}$

C. $(2n+1)\frac{\pi}{14}$

D. $(2n+1)\frac{\pi}{14}, n \neq 8k$

Answer: C

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22. Find the possible values of a such that $f(x) = e^{2x} - (a+1)e^{x} + 2x$ is monotonically increasing for $x \in R$.

A. (3,4)

B. $(-\infty, 0)$

C. $(-\infty, 3)$

D. $(3, \infty)$

Answer: B

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23. The equation to the line touching both the parabolas $y^2 = 4x$ and $x^2 = -32y$ is

A. $x + 2y + 4 = 0$

B. $2x + y - 4 = 0$

C. $2x + y - 4 = 0$

D. $x - 2y + 4 = 0$

Answer: C

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24. the less interger a , for which

$1 + \log_5\left(x^2 + 1\right) \leq \log_5\left(ax^2 + 4x + a\right)$ is true for all $x \in$ R is -

A. 6

B. 7

C. 10

D. 1

Answer: B

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25. A curve with equation of the form $y = ax^4 + bx^3 + cx + d$ has zero gradient at the point $(0, 1)$ and also touches the $x -$ axis at the point $(-1, 0)$ then the value of x for which the curve has a negative gradient are: $x \geq -1$ b. $x < 1$ c. $x < -1$ d. $-1 \leq x \leq 1$

A. xgt-I

B. xlt1

C. xlarr1

D. $-1 \leq x \leq 1$

Answer: C

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26.

If $\int x^5 \left(1+x^3\right)^{2/3} dx = A\left(1+x^3\right)^{8/3} + B\left(1+x^3\right)^{5/3} + c,$ then

A. $A = \frac{1}{4}, B = \frac{1}{5}$

B. $A = \frac{1}{8}, B = \frac{1}{5}$

C. $A = -\frac{1}{8}, B = \frac{1}{5}$

D. none of these

Answer: B

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27. If the relation R : $A \to B$, where A={1,2,3} and B={1,3,5} is defined by

$R = \{(x, y) : x < y, x \in A, y \in B\}$, then-

A. $R = \{(1, 3), (1, 5), (2, 3), (2, 5), (3, 5)\}$

B. $R = \{(1, 1), (1, 5), (2, 3), (3, 5)\}$

C. $R^{-1} = \{(3, 1), (5, 1), (3, 2), (5, 3)\}$

D. $R^{-1} = \{(1, 1), (5, 1), (3, 2), (5, 3)\}$

Answer: A

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28. Value of $\lim_{a \to \infty} \left(e.\, a^2.\, e^3.\, a^4. \ldots\ldots\ldots e^{n-1} a^n\right)^{\frac{1}{n^2+1}}$ is

A. 1

B. 0

C. $\sqrt{ab}$

D. $4\sqrt{ae}$

Answer: D

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29. Let $A = \begin{bmatrix} 2 & q \\ 0 & 1 \end{bmatrix}$ and $A^8 = \begin{bmatrix} x & yq \\ 0 & 1 \end{bmatrix}$, then x-y is -

A. 0

B. 1

C. 2

D. -1

Answer: B

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30. For a series the value of men deviation is 15. The most likely value of its quartile deviation is -

A. 12.5

B. 11.6

C. 13

D. 9.7

Answer: A

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