MATHS

BOOKS - CAREER POINT

MOCK TEST 5

Part C Maths

1. The total number of matrices formed with the help of 6 different numer are-

A. $6!$

B. $3(6)!$

C. $2(6)!$

D. $4(6)!$

Answer: D

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2. If an integer p is chosen at random in the interval $0 \leq p \leq 5$, then the probality that the roots of the equation $x^2 + px + \frac{p}{4} + \frac{1}{2} = 0$ are real is -

A. $\frac{4}{5}$

B. $\frac{2}{3}$

C. $\frac{3}{5}$

D. None of these

Answer: B

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3. If p and q are two statements then the truth valueso of compound statemetns

$p \leftrightarrow (p \wedge \ -q)$ is -

A. F,F,T,T

B. T,T,F,F

C. F,T,T,T

D. None

Answer: C

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4. $\sum_{r=0}^{10} r.^{10} C_r, 3^r.(-2)^{10-r}$ is -

A. 20

B. 10

C. 30

D. 300

Answer: C

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5. A cadiadate has to reach the examination centre in time, Probality of him going by bus or scooter or by other means of transport are $\frac{3}{10}, \frac{1}{10}, \frac{3}{5}$ respectively. The probability of getting late , if the travels by bus is 1/4 ,1/3 if he travells by scooter and 0 for any other medium. But he reaches in time if the uses any mode of transport . He reached late at the centre. The probability that he travelled by bus is -

A. $\frac{1}{9}$

B. $\frac{2}{13}$

C. $\frac{9}{13}$

D. None of these

Answer: C

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6. If the slope of chord PQ of f(x) $= x^3 - 2x^{-3} + 10$ is 9, then relation between the AM (A) and GM (G) of abscissae of points P and Q is -

A. $9G^2 - (7A^2 - G^2)(G^6 + 2) = 0$

B. $6G^6 - (7A^2 - G^2)(G^6 + 2) = 0$

C. $9G^6 - (4A^2 - G^2)(G^6 + 2) = 0$

D. $6G^6 - (4A^2 - G^2)(G^6 + 2) = 0$

Answer: C

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7. Dual of $(x' \wedge y') = x \vee y$ is

A. $(x' \wedge y') = x \wedge y$

B. $(x' \vee y') = x \wedge y$

C. $(x' \vee y') = xy$

D. None of these

Answer: B

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8. The locus of the centere of a circle which passes through the point (0,0) and cuts off a length 2b from the line x=c is-

A. $y^2 + 2cx = b^2 + c^2$

B. $x^2 + cx = b^2 + c^2$

C. $y^2 + 2cy = b^2 + c^2$

D. none of these

Answer: A

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9. Cicles drawn on the diameter as focal distance of any point lying on the parabola $x^2 - 4x + 6y + 10 = 0$ will touch a fixed line whoose equation is -

A. y=2

B. y=-1

C. x+y=2

D. x-y=2

Answer: B

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10. The distance of a point, P,on the ellpise $x^2 + 3y^2 = 6$ lying in the firsrt quadrant, form the centre of the ellipse is 2 units. The eccerntric angle of the point P is-

A. $\frac{\pi}{3}$

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

C. $\frac{\pi}{6}$

D. none of these

Answer: B

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11. Total number of integral values of 'a' so that $x^2 - (a+1)x + a - 1 = 0$ has roots, is equal to :

A. 2

B. 1

C. 4

D. none of these

Answer: B

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12. If a,b,c,d are such unequal real numbers that $\left(a^2+b^2+c^2\right)p^2 - 2(ab+bc+cd)p + \left(b^2+c^2+d^2\right) \leq 0$

then a,b,c, d are in -

A. A.P

B. G.P

C. H.P.

D. none of these

Answer: B

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13. If (x) donotes the greates integer $\leq x$, then the value of $\int_4^{10} \frac{[x^2]}{[x^2-28x+196]+[x^2]}$ dx is -

A. 3

B. 2

C. 1

D. 0

Answer: A

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14. The area of the portion of the circle $x^2 + y^2 = 1$ which lies inside the parabola $y^2 = 1 - x,$ is -

A. $\frac{\pi}{2} - \frac{2}{3}$

B. $\frac{\pi}{2} + \frac{2}{3}$

C. $\frac{\pi}{2} + \frac{4}{3}$

D. $\frac{\pi}{2} - \frac{4}{3}$

Answer: C

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15. Solution of the differential equation x dy -y dx = 0 represents-

A. parabala whose vertex is at origin

B. circle whose centre is at orgin

C. a rectangular hyperbola

D. straight line passing through origin

Answer: D

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16. $k = \lim_{x \to \infty} \left[\frac{\sum_{k=1}^{1000} (x+k)^m}{x^m + 10^{1000}} \right]$ (mgt101) is -

A. 10

B. 10^2

C. 10^3

D. 10^4

Answer: C

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17. if roots of $ax^2 + bx + c = 0$ where εR^+, are two positive consecutive even integers, then

A. $|b| \leq 6a$

B. $|b| \geq 6a$

C. $|b| = 6a$

D. None of these

Answer: B

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18. If $\cos^{-1}(\cos x) = \sqrt{1 \sin 2x} \forall x \varepsilon (0, 2\pi)$, then no. of solution =

A. 2

B. 4

C. 3

D. 5

Answer: A

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19. For a what value (s) of a, will the two points (1,a,1) and (-3,0,a) lie on opposite sides of the plane $3x + 4y - 12x + 13 - 0?$

A. $a < -1$ or $a > 1/3$

B. a=0 only

C. $0 < a < 1$

D. $-1 < a < 1$

Answer: A

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20. The number of integer values of x for which the inequality $\log_{10}\left(\frac{2x-2007}{x+1}\right) \geq 0,$ is true, is

A. 1004

B. 1005

C. 2007

D. infinite

Answer: D

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21. If three vectors $\left(\sec^2 A\right)\hat{i}+\hat{j}+\hat{k}$, $\hat{i}+\left(\sec^2 B\right)\hat{j}+\hat{k}$, $\hat{i}+\hat{j}+\sec^2\hat{k}$ are complnar, then the value of $\cos ec^2 A+\cos ec^2 B+\cos ec^2 C$ is -

A. 1

B. 2

C. 3

D. None of these

Answer: B

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22. Maximum value of the expression

$$\frac{10x^{12}}{x^{24}+2x^{12}+3x^{16}+3x^{8}+1}$$

A. 1

B. 2

C. 10

D. 5

Answer: A

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23. if f be a differentiable function such that $f(x) = x^2 \int_0^x e^{-t} f(x-t).\ dt$. Then f(x) =

A. 0

B. $\frac{x^3}{3} + x^2$

C. not possible

D. $5x^2$

Answer: B

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24. For what values of a, m and b, Lagrange's mean value theerorem is applicable to the fucntion f(x) for $x\varepsilon[0,2], f(x) = \begin{cases} 3 & x = 0 \\ -x^2 + a & a < x < 1 \\ mx + b & 1 \leq x \leq 2 \end{cases}$

A. a=3, m=-2,b=0

B. a=3, m=-2,b=4

C. a=3, m=-2,b=4

D. No such a, m b exist

Answer: B

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25. The value of x for which $f(x) = \left(\sin.\frac{\{x\}}{\{x\}} + \cos.\frac{\{x\}}{\{x\}}\right)$ is maximum ({x} and [x] denots fractiona part and greatest integer part of x respectively)

A. $1 + \frac{\pi}{4}$

B. $2 + \frac{\pi}{4}$

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

D. none of these

Answer: A

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26. If $l^r(x)$ means $\log\log\log\ldots\ldots x$ being repeated r times, then $\int\left[(xl(x)l^2(x)l^3(x)\ldots. l^r(x)\right]^{-1}dx$ is equal to :

A. $l^{r+1}(x)+c$

B. $\frac{l^{r+1}(x)}{r+1}+c$

C. $l^r(x)+c$

D. None of these

Answer: A

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27. Consider the non-empty set consisting of children in a family and a relation R defined as aRb, if a is brother of b. Then, R is

A. Symmetric but not transitive

B. Transitive but not transitive

C. Neither symametic nor transitive

D. Both symmetric and transitive

Answer: B

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28. $u_n = \begin{vmatrix} 1 & k & k \\ 2n & k^2+k+1 & k^2+k \\ 2n-1 & k^2 & k^2+k+1 \end{vmatrix}$ and $\sum_{n=1}^{k} u_n = 72$ then k=

A. 8

B. 9

C. 6

D. none of these

Answer: A

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29. Let (p) x be a polynomial of degree 4 having extemum at x= 1,2 and $\lim_{x \to o} \left(1 - \frac{P(x)}{x^2}\right) = 2$ then P(2) =

A. 0

B. $1/4$

C. -1

D. None of these

Answer: A

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30. The mean of 50 observation is 36. if two observation 30 and 42 are to be excluded, then the mena of the

reamining observations will be-

A. 36

B. 38

C. 48

D. 50

Answer: A