MATHS

BOOKS - JMD MATHS (PUNJABI ENGLISH)

PSEB SAMPLE QUESTIONS

Example

1. Function 'f:RrarrR,f(x)=3x-5' is :

A. one to one

B. onto only

C. one-one and onto

D. none of these

Answer: C

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2. Relation given by 'R={(1,1),(2,2),(2,1)} is :

A. reflexive only

B. symmetric only

C. transitive only

D. equivalence relation

Answer: D

3. $\cos^{-1}(-\cos((2\pi)/3))'$ is equal to :

A. pi/5

B. -(2pi)/3

C. (pi)/2

D. (pi)/3

Answer: D

4. If $\begin{bmatrix} 1 & -x \\ 4 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 8 \\ 4 & -3 \end{bmatrix}$ then value of x is :

A. 8

B. -4

C. 3

D. -8

Answer: D

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5. If order of matrix A is 2X3 and order of matrix B is 3X5 then order of matrix B'A' is :

A. 5X2

B. 2X5

C. 5X3

D. 3X2

Answer: A

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6. If 'f(x)= {[Kx+1,xle5],[3x-5,x>5]:}' is continuous at x=5 then value of k is :

   A. (9)/5

   B. (5)/9

   C. (5)/3

   D. (3)/5

Answer: A

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7. $\dfrac{d}{dx}\left\{\tan^{-1}(e^x)\right\}$ is equal to :

A. e^xtan^(-1)e^x

B. (e^x)/(1+e^(2x))

C. 0

D. e^x sec^(-1)x

Answer: B

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8. Slope of tangent to the curve 'y = x^2-2x+1' at x=3 is

:

A. 4

B. 6

C. 0

D. 2

Answer: A

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9. int3x^2dx' is equal to :

A. x+c

B. x^2+c

C. x^3+c

D. x^4+c

Answer: C

10. $\displaystyle\int_{0}^{\frac{\pi}{2}} \frac{\sin^{\frac{1}{2}}x}{\sin^{\frac{1}{2}}x + \cos^{\frac{1}{2}}x} dx$ is equal to :

A. 0

B. (pi)/2

C. (pi)/3

D. (pi)/4

Answer: D

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11. Degree of differential $\dfrac{d^2y}{dx^2} - 2\left(\dfrac{dy}{dx}\right) + 3y = 0$ is

A. 3

B. 2

C. 1

D. 0

Answer: C

12. If $\vec{a} \cdot \vec{b} = |\vec{a} \times \vec{b}|$, then angle between vector $\vec{a}$ and vector $\vec{b}$ is :

A. pi/2

B. pi/6

C. pi/4

D. pi/3

Answer: C

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13. If $\vec{a} \cdot \vec{b} = 0$ then angle between vector veca and vecb is:

A. pi/2

B. pi/6

C. pi/4

D. pi/3

Answer: A

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14. Direction ratios of line given by line $\dfrac{x-1}{3} = \dfrac{2y+6}{12} = \dfrac{1-z}{-7}$ are :

A. lt3,12,-7gt

B. lt3,-6,7gt

C. lt3,6,7gt

D. lt3,6,-7gt

Answer: C

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15. Maximum value of $Z = 3x + y$ for the constraints

$x + y \leq 4, x \geq 0, y \geq 0$ is :

A. 12

B. 16

C. 4

D. 10

Answer: A

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16. If $P(A) = \dfrac{1}{2}$, $P(B) = \dfrac{3}{8}$ and $P(A \cap B) = \dfrac{1}{5}$.

then P(A/B) is equal to :

A. (2/5)

B. (3/15)

C. (2/3)

D. (5/8)

Answer: B

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17. Value of sin^-1(1) is

18. If $A = \left[a_{ij}\right]_{2 \times 3}$ such that $a_{ij} = i + j$ then a 11=

19. If $\begin{vmatrix} x & 0 \\ 7 & 1 \end{vmatrix} = \begin{vmatrix} 3 & 0 \\ 7 & 1 \end{vmatrix}$ then x=

20. If 'y=cos x ' then at'x=0', 'dy/dx=..........'.

21. $\int_0^5 f(x)\, dx = \ldots\ldots$

22. Order of the differential equation $\dfrac{d^2y}{dx^2} - \dfrac{dy}{dx} + y = 0$ is $\ldots\ldots$.

23. Direction ratios of a line which is perpendicular to the plane $3x - y + 2z = 9$ are $\ldots\ldots$.

24. Probability of occurrence of impossible event=

....

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25. If A is a square matrix then '(A-A') is a skew-symmetric matrix.

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26. If 'y=10x' then 'dy/dx= 0'.

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27. If 'y=tan x' then 'dy/dx=sec^2x'.

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28. Prove that $\int 2x\,dx = x^2 + c$

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29. State true or false : Scalar product pf two perpendicular vectors is zero.

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30. Point (3,-4,2) lies in the plane $2x + y - z = 0$

31. If $P(E) = 0.05$ than find the value of $P(NotE)$?

32. If '[[2,3],[1,4]]' and 'f(x)=x^2+2x+3' then fond 'f(A)'.

33. Find the interval in which function 'f(x)=x^2+2x-7' is increasing.

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34. Find the slope of the normal to the curve $y = x^3 - x + 1$ at the point whose x- coordinate is 2.

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35. Evaluate $\int e^x \left(\log x + \dfrac{1}{x} \right) dx$.

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36. Evaluate 'int x sin x dx'

37. Using integration find the area bounded by the parabola 'y^2=4x' straight lines 'x=1', 'x=4' in the first quadrant.

38. Find the unit vector in the direction of diagonal of the parallelogram whose sides are given by the vectors $\vec{a} = 2\hat{i} - \hat{j} - 3\hat{k}'$, $\vec{b} = 5\hat{i} + 2\hat{j} - \hat{k}$

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39. find the value of

$$2\tan^{-1}\left(\frac{1}{\sqrt{3}}\right) + \cos^{-1}\left(\frac{1}{\sqrt{2}}\right) + 2\sec^{-1}\left(\frac{2}{\sqrt{3}}\right)$$

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40. If $y = x^{\sin x} + (\sin x)^x$ then find $\frac{dy}{dx}$.

41. If $y = \left[\tan^{-1} x\right]^2$, then prove that :

$\left(x^2 + 1\right)^2 y_2 + 2x\left(x^2 + 1\right) y_1 = 2.$

42. Evaluate $\displaystyle\int \frac{\sec^2 x}{\tan^2 x - 4\tan x + 7}\,dx.$

43. find the general solution of the differential equation $\left\{x^2 dy - \left(x^2 + xy + y^2\right)\right\} dx = 0$

44. find the general solution of the differential equation $\sec^2 x \tan y \, dx - \sec^2 y \tan x \, dy = 0$

45. Bag I contains 3 red and 4 white balls. Bag II contents 7 red and 5 white balls.A bag is selected at random and a ball is drawn from it which is found to be Red. Find the probability that balls is drawn from bag II

46. solve the following system of linear equation by Matrix method:

$$2x + 3y - 5z = 13,\ x - y + z = -2,\ 3x + 2y - z = 8$$

47. Express A= $\begin{bmatrix} 2 & 3 & 5 \\ 0 & 2 & 9 \\ 3 & 2 & 8 \end{bmatrix}$ as the sum of a symmetric matrix and skew- symmetric matrix.

48. find the shortest distance between the lines

$$\overrightarrow{r} = 6\hat{i} - \hat{j} + 3\hat{k} + \lambda\left(\hat{i} + 3\hat{j} + 2\hat{k}\right) \qquad \text{and}$$

$$\hat{r} = 9\hat{i} + \hat{j} - 4\hat{k} + \mu\left(\hat{i} - 2\hat{j} + \hat{k}\right)$$

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49. find the foot of perpendicular drawn from the

point (2,-3,5) on the plane $3x + 4y - 2z = 20$

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50. solve the following linear programming problem

graphically: Maximize and minimize $Z = 4x + 3y$

subject to the constraints:

$$x + y \leq 8, 4x + y \geq 8, x - y \geq 0, x \geq 0, y \geq 0$$

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51. solve the following linear programming problem graphically: maximize and minimize $Z = 5x + 2y - 2)$ subject to the constraints $x + y \leq 10, x + y \geq 3, x \leq 8, y \geq 8, x \geq 0, y \geq 0$

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