Q1. The image of the point (1,6,3) in the $\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$ x1=y−12=z−23 is

A (1,0,7)

B (7,0,1)

C (2,7,0)

D (-1,-6,-3)

Q2. The angle between the lines $2x = 3y = -z$ 2x=3y=−zand $6x = -y = -4z$ 6x=−y=−4z is

A 0° 0∘

B 45° 45∘

C 90° 90∘

D 30° 30∘

Q3. The value of k such that the line $\frac{x-4}{1} = \frac{y-2}{1} = \frac{z-k}{2}$ x−41=y−21=z−k2 lies on the place $2x - 4y + z = 7$ 2x−4y+z=7 is

A -7

B 4

C -4

D 7

Q4. The locus represented by $xy + yz = 0$ xy+yz=0 is

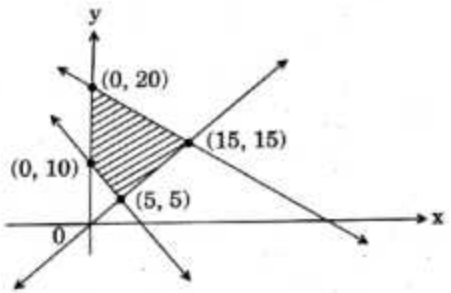
A a pair of perpendicular lines

B a pair of parallel lines

C a pair of parallel planes

D a pair of perpendicular planes

Q5. The feasible region of an LPP is shown in the figure . If $z = 3x + 9y$, $z=3x+9y$, then the minimum value of z occurs at



A (5,5)

B (0,10)

C (0,20)

D (15,15)

Q6. For the LPP; maximise $z = x + 4y$ $z=x+4y$ subject to the constraints
$x + 2y \leq 2, x + 2y \geq 8, x, y \geq 0$ $x+2y\leq2,x+2y\geq8,x,y\geq0$

A $z_{max} = 4$ zmax=4

B $z_{max} = 8$ zmax=8

C $z_{max} = 16$ zmax=16

D Has no feasible solution

Q7. For the probability distribution given by

$X = x_i$ X=xi	0	1	2
P_i Pi	$\frac{25}{36}$ 2536	$\frac{5}{18}$ 518	$\frac{1}{36}$ 136

the standard deviation (σ) (σ) is

A $\sqrt{\frac{1}{3}}13$

B $\frac{1}{3}\sqrt{\frac{5}{2}}1352$

C $\sqrt{\frac{5}{36}}536$

D None of the above

Q8. A bag contains 17 tickets numbered from 1 to 17. A ticket is draw at random, then another ticket is drawn at random, then another ticket is drawn without replacing the first one . The probability that both the tickets may show even numbers is

A $\frac{7}{34}734$

B $\frac{8}{17}817$

C $\frac{7}{16}716$

D $\frac{7}{17}717$

Q9. A flashlight has 10 batteries out of which 4 are dead. If 3 batteries are selected without replacement and tested, then the probability that all 3 are dead is

A $\frac{1}{30}130$

B $\frac{2}{8}28$

C $\frac{1}{15}115$

D $\frac{1}{10}110$

Q10. If $|x+5| \geq 10$ $|x+5|\geq 10$ then

A $x \in (-15, 5]$ $x\in(-15,5]$

B $x \in (-5, 5]$ $x\in(-5,5]$

C $x \in (-\infty, -15] \cup [5, \infty)$ $x\in(-\infty,-15]\cup[5,\infty)$

D $x \in [-\infty, -15] \cup [5, \infty)$ x∈[−∞,−15]∪[5,∞)

Q11. Everybody in a room shakes hands with everybody else. The total number of handshakes is 45. The total number of persons in the room is

A 9

B 10

C 5

D 15

Q12. The constant term in the expansion of $(x^2 - \frac{1}{x^2})^{16}$ (x2−1x2)16 is

A $^{16}C_8$ 16C8

B $^{16}C_7$ 16C7

C $^{16}C_9$ 16C9

D $^{16}C_{10}$ 16C10

Q13. If $P(n)$:" $2^{2n} - 1$ P(n):"22n−1 is divisible by k for all $n \in N$ " n∈N" is true, then the value of 'k' is

A 6

B 3

C 7

D 2

Q14. The equation of the line parallel to the line $3x - 4y + 2 = 0$ 3x−4y+2=0 and passing through $(-2, 3)$ (−2,3) is

A $3x - 4y + 18 = 0$ 3x−4y+18=0

B $3x - 4y - 18 = 0$ 3x−4y−18=0

C $3x + 4y + 18 = 0$ 3x+4y+18=0

D $3x + 4y - 18 = 0$ 3x+4y−18=0

Q15. If $(\frac{1-i}{1+i})^{96} = a + ib$ (1−i1+i)96=a+ib then (a,b) is

A (1,1)

B (1,0)

C (0,1)

D (0,-1)

Q16. The distance between the foci of a hyperbola is 16 and its eccentricity is $\sqrt{2}$. Its equation is

A $x^2 - y^2 = 32$ x2−y2=32

B $\frac{x^2}{4} - \frac{y^2}{9} = 1$ x24−y29=1

C $2x^2 - 3y^2 = 7$ 2x2−3y2=7

D $y^2 - x^2 = 32$ y2−x2=32

Q17. The number of ways in which 5 girls and 3 boys can be seated in a row so the no two boys are together is

A 14040

B 14440

C 14000

D 14400

Q18. If a, b, c are three consecutive terms of an AP and x, y, z are three consecutive terms of a GP, then the value of $x^{b-c} \cdot y^{c-a} \cdot z^{a-b}$ xb−c.yc−a.za−b is

A 0

B xyz

C -1

D 1

Q19. The value of $\lim_{x \to 0} \frac{|x|}{x}$ limx→0|x|x is

A 1

B -1

C 0

D Does not exist

Q20. Let $f(x) = x - \frac{1}{x}$ f(x)=x−1x then $f'(-1)$ f′(−1) is

A 0

B 2

C 1

D -2

Q21. The negation of the statement "72 is divisible by 2 and 3" is

A 72 is not divisible by 2 or 72 is not divisible by 3

B 72 is not divisible by 2 or 72 is divisible by 3

C 72 is not divisible by 2 and 72 is divisible by 3

D 72 is not divisible by 2 and 3

Q22. The probability of happening of an event A is 0.5 and the of B is 0.3 .If A and B are mutually exclusive events, then the probability of neither A nor B is

A 0.4

B 0.5

C 0.2

D 0.9

Q23. In a simultaneous throw of a pair of dice, the probability of getting a total more than 7 is

A $\frac{7}{12}$712

B $\frac{5}{36}$536

C $\frac{5}{12}$512

D $\frac{7}{36}$736

Q24. If A and B are mutually exclusive events , given that $P(A) = \frac{3}{5}, P(B) = \frac{1}{5}$ P(A)=35,P(B)=15, then P(A or B) is

A 0.8

B 0.6

C 0.4

D 0.2

Q25. Let $f, g : R \rightarrow R$ f,g:R→R be two functions defined as $f(x) = |x| + x$ f(x)=|x|+x and $g(x) = |x| - x \forall x \in R$ g(x)=|x|−x∀x∈R. Then $(fog)(x)$ (fog) (x) for $x < 0$ x<0 is

A 0

B 4x

C -4x

D 2x

Q26. A is a set having 6 distinct elements. The number of distinct functions from A to A which are not bijections is

A $6! - 6$ 6!−6

B $6^6 - 6$ 66−6

C $6^6 - 6!$ 66−6!

D $6!^{6!}$

Q27. Let $f : R \to R$ f:R→R be defined by

$$\begin{cases} 2x & ; \quad x > 3 \\ x^2 & ; \quad 1 < x \leq 3 \\ 3x & ; \quad x \leq 1 \end{cases}$$ {2x;x >3x2;1<x ≤33x;x≤1

Then $f(-1) + f(2) + f(4)$ f(−1)+f(2)+f(4) is

A 9

B 14

C 5

D 10

Q28. If $\sin^{-1} x + \cos^{-1} y = \frac{2\pi}{5}$ sin−1x+cos−1y=2π5 , then $\cos^{-1} x + \sin^{-1} y$ cos−1x+sin−1y is

A $\frac{2\pi}{5}$ 2π5

B $\frac{3\pi}{5}$ 3π5

C $\frac{4\pi}{5}$ 4π5

D $\frac{3\pi}{10}$ 3π10

Q29. The value of the expression $\tan(\frac{1}{2}\cos^{-1}\frac{2}{\sqrt{5}})$ tan(12cos−125) is

A $2-\sqrt{5}$ 2−5

B $\sqrt{5}-2$ 5−2

C $\frac{\sqrt{5}-2}{2}$ 5−22

D $5-\sqrt{2}$ 5−2

Q30. If $A=\begin{bmatrix}2 & -2\\ -2 & 2\end{bmatrix}$ A=[2−2−22] then $A^n = 2^k A$, An=2kA, where k =

A 2^{n-1} 2n−1

B n + 1

C n - 1

D 2(n -1)

Q31. If $\begin{bmatrix}1 & 1\\ -1 & 1\end{bmatrix}\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}2\\ 4\end{bmatrix}$ [11−11][xy]=[24] then the values of x and y respectively are

A -3, -1

B 1,3

C 3,1

D -1,3

Q32. $A=\begin{bmatrix}\cos\alpha & \sin\alpha\\ -\sin\alpha & \cos\alpha\end{bmatrix}$ A=[cosαsinα−sinαcosα] , then $AA^{'} = AA'=$

A A

B Zero matrix

C A'

D 1

Q33. If $x, y, z \in R$, x,y,z∈R, then the value of determinant $\begin{vmatrix} (5^x+5^{-x})^2 & (5^x-5^{-x})^2 & 1 \\ (6^x+6^{-x})^2 & (6^x-6^{-x})^2 & 1 \\ (7^x+7^{-x})^2 & (7^x-7^{-x})^2 & 1 \end{vmatrix}$ |(5x+5−x)2(5x−5−x)21(6x+6−x)2(6x−6−x)21(7x+7−x)2(7x−7−x)21| is

A 10

B 12

C 1

D 0

Q34. The value of determinant $\begin{vmatrix} a-b & b+c & a \\ b-a & c+a & b \\ c-a & a+b & c \end{vmatrix}$ |a−bb+cab−ac+abc−aa+bc| is

A $a^3+b^3+c^3$ a3+b3+c3

B 3abc3abc

C $a^3+b^3+c^3-3abc$ a3+b3+c3−3abc

D $a^3+b^3+c^3+3abc$ a3+b3+c3+3abc

Q35. If $(x_1, y_1), (x_2, y_2)$ (x1,y1),(x2,y2) and (x_3, y_3) (x3,y3) are the vertices of a triangle whose area is 'k' square units, then $\begin{vmatrix} x_1 & y_1 & 4 \\ x_2 & y_2 & 4 \\ x_3 & y_3 & 4 \end{vmatrix}^2$ |x1y14x2y24x3y34|2 is

A $32/k^2$ 32/k2

B $16/k^2$ 16/k2

C $64/k^2$ 64/k2

D $48/k^2$ 48/k2

Q36. Let A be a square matrix of order 3×3 3×3, then $|5A| = |5A|=$

A $5|A|$ 5|A|

B $125|A|$ 125|A|

C $25|A|$ 25|A|

D $15|A|$ 15|A|

Q37. If

$$f(x) = \begin{cases} \frac{\sqrt{1+kx}-\sqrt{1-kx}}{x} & \text{if } -1 \le x < 0 \\ \frac{2x+1}{x-1} & \text{if } 0 \le x \le 1 \end{cases}$$ f(x)={1+kx−1−kxxif −1≤x<02x+1x−1if 0≤x≤1

is continuous at x = 0, then the value of k is

A k = 1

B k = - 1

C k = 0

D k = 2

Q38. If $\cos\ y = x\ \cos(a + y)$ cos y=x cos(a+y) with $\cos\ a \neq \pm 1$ cos a≠±1, then $\frac{dy}{dx}$dydx is equal to

A $\frac{\sin a}{\cos^2(a+y)}$ sin acos2(a+y)

B $\frac{\cos^2(a+y)}{\sin a}$ cos2(a+y)sin a

C $\frac{\cos a}{\sin^2(a+y)}$ cos asin2(a+y)

D $\frac{\cos^2(a+y)}{\cos a}$ cos2(a+y)cos a

Q39. If $f(x) = |\cos x - \sin|x$ f(x)=|cos x−sin|x, then $f'\left(\frac{\pi}{6}\right)$ f'(π6) is equal to

A $-\frac{1}{2}(1+\sqrt{3})$ −12(1+3)

B $\frac{1}{2}(1+\sqrt{3})$ 12(1+3)

C $-\frac{1}{2}(1-\sqrt{3})$ −12(1−3)

D $\frac{1}{2}(1-\sqrt{3})$ 12(1−3)

Q40. If $y = \sqrt{x+\sqrt{x+\sqrt{x+\ldots\infty}}}$, y=x+x+x+...∞, they $\frac{dy}{dx}$ = dydx=

A $\frac{1}{y^2-1}$ 1y2−1

B $\frac{1}{2y+1}$ 12y+1

C $\frac{2y}{y^2-1}$ 2yy2−1

D $\frac{1}{2y-1}$ 12y−1

Q41. If= $\begin{cases} \frac{\log_e x}{x-1} & ; \quad x \neq 1 \\ k & ; \quad x = 1 \end{cases}$ ={logexx−1;x≠1k;x =1 is continuous at x = 1, then the value of k is

A e

B 1

C -1

D 0

Q42. Approximate change in the volume V of a cube of side x metres caused by increasing the side by 3% is

A $0.09\ x^3\ m^3$ 0.09 x3 m3

B $0.03\ x^3\ m^3$ 0.03 x3 m3

C $0.06\ x^3\ m^3$ 0.06 x3 m3

D $0.04\ x^3\ m^3$ 0.04 x3 m3

Q43. The maximum value of $(\frac{1}{x})^x$ (1x)x is

A ee

B e^e ee

C $e^{1/e}$ e1/e

D $(\frac{1}{e})^{1/e}$ (1e)1/e

Q44. $f(x) = x^x$ f(x)=xx has stationary point at

A x = e x=e

B $x = \frac{1}{e}$ x=1e

C x = 1 x=1

D $x = \sqrt{e}$ x=e

Q45. The maximum area of a rectangle inscribed in the circle $(x + 1)^2 + (y - 3)^2 = 64$ (x+1)2+(y−3)2=64 is

A 64 sq. units

B 72 sq. units

C 128 sq. units

D 8 sq. units

Q46. $\int \frac{1}{1+e^x} dx$ ∫11+exdx is equal to

A $\log_e(\frac{e^x+1}{e^x})+c$ loge(ex+1ex)+c

B $\log_e(\frac{e^x-1}{e^x})+c$ loge(ex−1ex)+c

C $\log_e(\frac{e^x}{e^x+1})+c$ loge(exex+1)+c

D $\log_e(\frac{e^x}{e^x-1})+c$ loge(exex−1)+c

Q47. $\int \frac{1}{\sqrt{3-6x-9x^2}}dx$ ∫13−6x−9x2dx is equal to

A $\sin^{-1}(\frac{3x+1}{2})+c$ sin−1(3x+12)+c

B $\sin^{-1}(\frac{3x+1}{6})+c$ sin−1(3x+16)+c

C $\frac{1}{3}\sin^{-1}(\frac{3x+1}{2})+c$ 13sin−1(3x+12)+c

D $\sin^{-1}(\frac{2x+1}{3})+c$ sin−1(2x+13)+c

Q48. $\int e^{\sin x}.(\frac{\sin x+1}{\sec x})dx$ ∫esinx.(sinx+1secx)dx is equal to

A $\sin x.e^{\sin x}+c$ sin x.esin x+c

B $\cos x.e^{\sin x}+c$ cos x.esin x+c

C $e^{\sin x}+c$ esin x+c

D $e^{\sin x}(\sin x+1)+c$ esin x(sin x+1)+c

Q49. $\int_{-2}^{2}|x\cos \pi x|dx$ ∫−22|x cos πx|dx is equal to

A $\frac{8}{\pi}8\pi$

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

C $\frac{2}{\pi}2\pi$

D $\frac{1}{\pi}$