THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER- 1 RELATIONS & FUNCTIONS

Q1. If f(x) = log $\left(\frac{1+x}{1-x}\right)$ and g(x) = $\left(\frac{3x+x^3}{1+3x^2}\right)$ then f [g(x)] equals :
a) –f(x) b) -3f(x) c) 3f(x) d) $[f(x)]^3$

Q2. If f(x) = $\frac{x+1}{x-1}$, x ≠1, then (fofofof) is equal to :
a) $\frac{1}{x}$ b) x c) x^2 d) indeterminate

Q3. If A = (1,2,3) and B = {a,b} then total number of functions from A to B is :
a) 8 b) 6 c) 9 d) 16

Q4. Let f : R→ R is defined by f(x) = x^2, find f^{-1} (-25) .
a) 5 b) 25 c) -25 d) none of these

Q5. What is the range of the function f(x) = $\frac{Ix-1I}{x-1}$?
a) {1,2} b) {1,-1} c) {1,0} d) {-1,0}

Q6. Let f : R→R is defined by f (x) = $(3-x^3)^{1/3}$, then fof (x) is :
a) x b) x^3 c) $3x^3$ d) $x^{1/3}$

Q7. Let A = {1,2,3}. Then number of equivalence relation containing (1,2) is :
a) 1 b) 2 c) 3 d) 4

Q8. Let A = {1,2,3}. Then number of relations containing (1,2) and (1,3) which are reflexive and symmetric but not transitive is :
a) 1 b)2 c) 3 d) 4

Q9. The number of equivalence relation in the set A = {1,2,3} containing (1,2) and (2,1) is :
a) 1 b)2 c) 3 d) 4

Q10. The number of all relations from set A= {1,2,3} to itself is :
a) 3 b) 8 c) 16 d) 31

Q11. If F: R→ R is defined by f(x) = 5x+3, then f is :
a) f is one one onto
b) f is many one onto
c) f is one one but no onto
d) f is neither one one nor onto

Q12. If f(x) be a greatest interger function and g(x) be an absolute value function, find the value of :
(fog) $\left(\frac{-3}{2}\right)$, (gof) $\left(\frac{4}{3}\right)$
a) 2 b) -2 c) 1 d) -1

Q13. If f : R→ R and g :R→ R are defined by f(x) = x-3 and g(x) = x^2 + 1, then find values of x for which g[f(x)] = 10 are :
a) 0,-6 b) 2,-2 c) 1,-1 d) 0,6

Q14. If f(x) = $\sin^2$x and the composite function g[f(x)] = Isin xI, then the function g(x) is equal to :
a) - $\sqrt{x}$ b) $\sqrt{x}$ c) $\sqrt{x-1}$ d) $\sqrt{x+1}$

THE ASIAN SCHOOL, DEHRADUN

MULTIPLE CHOICE QUESTIONS 2019

MATHEMATICS CLASS – XII CHAPTER- 2 INVERSE TRIGONOMETRIC FUNCTIONS

Q1. The value of $\cos^{-1}\left(\frac{1}{2}\right) + 2\sin^{-1}\left(\frac{1}{2}\right)$ is :

a) $\pi/3$ b) $\frac{2\pi}{3}$ c) $\pi/6$ d) none of these

Q2. The value of $\cos^{-1}\left(\frac{-1}{2}\right) + \sin^{-1}\left(\frac{-\sqrt{3}}{2}\right)$ is :

a) $\frac{\pi}{3}$ b) $\frac{-2\pi}{3}$ c) $\frac{\pi}{6}$ d) none of these

Q3. The value of $\cot^{-1} 2+\cot^{-1} 3$ is :

a) $\frac{3\pi}{4}$ b) $\frac{\pi}{4}$ c) $\frac{2\pi}{3}$ d) none of these

Q4. If $\sin^{-1} x= y$, then :

a) $0\leq y \leq \pi$ b) $\frac{-\pi}{2} \leq \mathbf{y} \leq \frac{\pi}{2}$ c) $0<y< \pi$ d) $\frac{-\pi}{2} < y< \frac{\pi}{2}$

Q5. $\tan^{-1}\left(\frac{x}{y}\right) - \tan^{-1}\frac{x-y}{x+y}$ is equal to :

a) $\frac{\pi}{2}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{4}$ d) $\frac{-3\pi}{4}$

Q6. The value of $\sin^{-1}\frac{\sqrt{2}}{2} - \sin^{-1}\frac{1}{2}$ is :

a) $\frac{\pi}{12}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{4}$ d) none of these

Q7. The value of $\sin^{-1}\left(\frac{1}{\sqrt{10}}\right) + \sin^{-1}\left(\frac{3}{\sqrt{10}}\right)$ is :

a) $\frac{\pi}{2}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{3}$ d) none of these

Q8. The number of solutions of the equations $\tan^{-1} 2x+\tan^{-1} 3x= \frac{\pi}{4}$ is :

a) 2 b) 3 c) 4 d) none of these

Q9. The value of $\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{5}\right) + \tan^{-1}\left(\frac{1}{7}\right) + \tan^{-1}\left(\frac{1}{8}\right)$ is :

a) $\frac{\pi}{2}$ v) $\frac{\pi}{6}$ c) $\frac{\pi}{4}$ d) none of these

Q10. The value of $\sin^{-1}\left(sin\frac{3\pi}{5}\right)$ is :

a) $\frac{2\pi}{5}$ b) $\frac{2\pi}{3}$ c) $\frac{3\pi}{5}$ d) none of these

Q11. The value of $\sin^{-1}\left[cos\left(\frac{33\pi}{5}\right)\right]$ is :

a) $\frac{\pi}{10}$ b) $\frac{-\pi}{10}$ c) $\frac{3\pi}{5}$ d) none of these

Q12. The value of $\tan^2 (\sec^{-1}2)+ \cot^2 (\text{cosec}^{-1}3)$ is :

b) 11 b) 13 C) 23 D) None of these

Q13. The principal value of $\cot^{-1}\left(\frac{-1}{\sqrt{3}}\right)$ is :

a) $\frac{2\pi}{3}$ b) $\frac{-\pi}{10}$ c) $\frac{3\pi}{2}$ d) none of these

Q14. The principal value branch of $\text{cosec}^{-1} x$ is :

a) $\left[\frac{\pi}{2}\frac{\pi}{2}\right]$ -{0} b) $\left[\frac{\pi}{-2}\frac{\pi}{2}\right]$ c) $[0, \pi] - \left\{\frac{\pi}{2}\right\}$ d) none of these

Q15. The principal value branch of $\cot^{-1} x$ is :

a) $(0,\pi)$ b) $\left(0,\frac{\pi}{2}\right)$ c) $\left(-\frac{\pi}{2},\frac{\pi}{2}\right)$ d) none of these

THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER- 3 MATRICES

Q1. If A = $\begin{pmatrix} cos\alpha & -sin\alpha \\ sin\alpha & cos\alpha \end{pmatrix}$, then A + A'= I, if the value of α is :

a) $\pi/6$ b) $\pi/3$ c) 3 $\pi/2$ d) π

Q2. Matrices A and B will be inverses of each other only if :

a) AB = BA B) AB = BA = 0 c) AB = 0, BA = I d) AB= BA = I

Q3. For what value of x : [1 2 1] $\begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 2 \end{bmatrix} \begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix}$ = 0?

a) -1 b) 0 c) 2 d) none of these

Q4. If the matrix A is both symmetric and skew symmetric, then :

a) A is a diagonal matrix b) A is a zero matrix c) A is a square matrix d) none of these

Q5. If A = $\begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$, then $A^2 - 5A + 7I$ is :

a) 0 b) I c) A d) None of these

Q6. If the matrix A = $\begin{bmatrix} 5 & x & -1 \\ 4 & -2 & -3 \\ 7 & 2 & 2 \end{bmatrix}$ is a singular matrix, then value of x :

a) x = $\frac{-12}{29}$ b) x = $\frac{12}{29}$ c) x = $\frac{12}{19}$ d) none of these

Q7. The matrix A = $\begin{bmatrix} 0 & 0 & 5 \\ 0 & 5 & 0 \\ 5 & 0 & 0 \end{bmatrix}$ is a :

a) scalar matrix b) diagonal matrix c) unit matrix d) square matrix

Q8. If A and B are symmetric matrices of the same order, the AB' – BA' is a :

a) skew- symmetric matrix b) symmetric matrix c) zero matrix d) identity matrix

Q9. Total number of possible matrices of order 3x3 with each entry 2 or 0.

a) 9 b) 27 c) 81 d) 512

Q10. If A and B are two matrices of the order 3xm and 3xn, respectively, and m=n, then the order of matrix (5A-2B) is :

a) mx3 b) 3x3 c) mxn d) 3xn

Q11. If A is matrix of order mxn and B is a matrix such that AB' and BA' are defined, then order of matrix B is :

a) m x m b) n xn c) n x m d) m x n

Q12. If matrix A = $[a_{ij}]_{2 \times 2}$, where a_{ij} = 1 if i$\neq$j and a_{ij}=0 if I = j then A^2 is equal to :

a) I (unit matrix) b) A c) O d) none of these

Q13. If A = $\begin{bmatrix} 5 & x \\ y & 0 \end{bmatrix}$ andA is symmetric matrix then :

a) x = y b) x = 0 c) y = 0 d) x $\neq$y

Q14. The sum of two skew matrices is :

a) symmetric matrix b) null matrix c) skew- symmetric matrix d) diagonal matrix

Q15. If A is any symmetric matrix then both AA' and A'A are :

a) symmetric matrix b) null matrix c) skew symmetric matrix d) diagonal matrix

THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER-4 DETERMINANTS

Q1. The values of x for which $\begin{vmatrix} 3 & x \\ x & 1 \end{vmatrix} = \begin{vmatrix} 3 & 2 \\ 4 & 1 \end{vmatrix}$ is :

a) $x = \mp 2\sqrt{2}$ b) $x = -2\sqrt{2}$ c) $x = 2\sqrt{2}$ d) none of these

Q2. A square matrix is invertible if and only if A is a :

a) null matrix b) singular matrix c) non- singular d) none of these

Q3. If A is an invertible matrix of order 3 and IAI = 5, then find the value of Iadj AI

a) 25 b) 5 c) 125 d) none of these

Q4. If A be square matrix of order 3 such that Iadj AI = 64, then IAI :

a) ∓ 8 b) -8 c) 8 d) none of these

Q5. There are two values of x which makes, $\begin{vmatrix} 1 & -2 & 5 \\ 2 & x & -1 \\ 0 & 4 & 2x \end{vmatrix} = 86$, then sum of these values is :

a) 4 b)5 c) -4 d) 9

Q6. Let A be square matrix of order 3x3, then IkAI is equal to :

a) k I A I b) K^2I A I c) K^3 I A I d) 3k I AI

Q7. If A is invertible matrix of order 2, then det (A^{-1}) is equal to :

a) det(A) b) 1/ det(A) c) 1 d) 0

Q8.If a, b,c are in A.P then determinant $\begin{vmatrix} x+2 & x+3 & x+a \\ x+3 & x+4 & x+b \\ x+4 & x+5 & x+c \end{vmatrix}$ is :

a) 0 b)1 c) x d) 2x

Q9. Let A be square matrix of order 3x3, IAI $\neq 0$ and IkAI = kIAI then k is :

a) 0 b) 3 c) 9 d) 27

Q10. If A and B are non- singular square matrices of the same order then adj (AB) is :

a) AB b) BA c) (adj A)(adj B) d) (adjB) (adjA)

Q11. If a^2 – A+I=0 then the inverse of A is :

a) A+1 b) I-A c) A-I d) I+A

Q12. If A is square matrix of order 3 such that IAI = 3, then the value of (adj (adjA) is :

a) 9 b) 81 c)6 d) 27

Q13. If A,B,C are invertible matrices, of the same order then $(ABC)^{-1}$ is :

a) $A^{-1} B^{-1} C^{-1}$ b) ABC c) $C^{-1}B^{-1}A^{-1}$ d) I

Q14. If A is invertible square matrix then adj (A^T) is :

a) A^T b) A c) $(adjA)^T$ d) None of these

THE ASIAN SCHOOL, DEHRADUN

MULTIPLE CHOICE QUESTIONS 2019

MATHEMATICS CLASS – XII CHAPTER-5 CONTINUITY AND DIFFERENTIABILITY

Q1. Test the continuity of the function f(x) = e^x at any real number x.

Q2. Discuss the continuity of the function f(x) = $x^3 + 2x^2 + 1$

Q3 Check the continuity of the function f(x) = $|x-1| + |x-2|$ at x =1 and x =2

Q4 Check the continuity of the function f(x) = $|x| + |x-2|$ at x =0.

Q5 Show that every polynomial function is continuous.

Q6 Find the relationship between l and m so that the function f(x) = $\begin{cases} lx+1 & \text{if } x \le 3 \\ mx+3 & \text{if } x \ge 3 \end{cases}$ is continuous at x = 3.

Q7 If a function is differentiable at any point c, prove that it is continuous also at c.

Q8 Find the derivative of the following functions:

(i) sin(cosx^2) (ii) $\sin^{-1} x + \cos^{-1} x$ (iii) x^x at x =e (iv) logsin(logx) (v) $\sin^{-1} x \sqrt{x}$ (vi) $\frac{8^x}{x^8}$ (vii) sim^{m}xcos^{n}x

Q9 Find $\frac{dy}{dx}$ if y = logt +sint and x = e^t+ cost

Q10 If x = logr and y = 1/r , prove that $y_2 + y_1 = 0$

Q11 If $x^y = y^x$, find dy/dx

Q12 If y = log$|5x|$, find dy/dx.

Q13At what points is the tangent parallel to the x axis for the following function

(i) y = cosx -1 , $\left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$(ii) y =tanx , $[0, \pi]$ (iii) y = sinx- sin2x, $[0, \pi]$ (iv) y = log(x^2+2) – log3, $[-1,1]$

Q14 Find the value of c for; LMVT for the function f(x) = x(x-2) ,x €$[1,2]$

THE ASIAN SCHOOL, DEHRADUN

MULTIPLE CHOICE QUESTIONS 2019

MATHEMATICS CLASS – XII CHAPTER-6 APPLICATION OF DERIVATIVES

Q1 The radius of a circle is increasing at a rate of 0.7cm/sec, find the rate of the increase of is circumference.

Q2 Find the slope of tangent to the curve $y = 3x^4 - 4x$ at the point $x = 4$.

Q3 If the normal to the curve at the point P is on y = f(x) is parallel to the y axis , what is the value of dy/dx at point P.

Q4 If the tangent to a curve at the point (x,y) is inclined equally to the coordinate axis , then write the value of dy/dx.

Q5 Write the maximum and minimum value of the function sinx .

Q6 At what point on the curve $4x = y^2$, the tangent makes an angle π/4 with the positive direction of x axis.

Q7 Find the interval in which the function f(x) = cosx in $[0,2\pi]$ is decreasing.

Q8 Find the rate of change of volume of a sphere of radius 4cm wrt to the radius r .

Q9 If the rate of change of the area of a circle is equal to the rate of change of the diameter , then find its radius.

Q10 If the rate of change of the volume of a sphere is equal to the rate of change of the radius , then find its radius

Q11 The function $f(x) = \sin x + \sqrt{3}\cos x$ is maximum for what value of x.

Q12 Write the maximum and minimum values of the function acosx + bsinx +c

Q13 Write the equation of the tangent to the curve $y = x^2 - x + 2$, at the point where it crosses the y axis.

Q14 Find the slope of tangent and normal to the curve $x = a\cos^3\theta$ and $y = a\sin^3\theta$ at $\theta = \pi/4$.

Q15 Find the least value of the curve $f(x) = px + \frac{q}{x}$, p>0, q>0 and x>0.

THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER-7 INTEGRALS

Q1 $\int (e^{2x} - e^{-2x})^{2\,dx}$

Q2 $\int e^{\log\sin x}\cos^3 x\ dx$.

Q3 $\int (10^x + x^{10} + 10^{10})dx$

Q4 $\int \frac{1-cos2x}{1+cos2x}$ dx

Q5 $\int \frac{x}{\sqrt{x+3}}$ dx

Q6 $\int \frac{2cosx}{3\sin^2 x}$ dx

Q8 $\int_0^1 (3x^2+2x+k)dx = 0$, find value of k.

Q9 $\int_{-\pi/2}^{\frac{\pi}{2}} \sin^3 x$ dx

Q10 Evaluate $\sin^{-1} cosx\ dx$

Q11 $\int_0^1 \frac{e^x}{1+e^{2x}}$ dx

Q12 $\int x \tan^{-1} x dx$

Q13 $\int_{-\pi/4}^{0} \frac{1+tanx}{1-tanx}$ dx

Q14 $\int e^x$(tanx+1)secxdx = e^x f(x) +c , find f(x)

Q15 $\int \frac{\sin^6 x}{\cos^8 x}$ dx

Q16 $\int_{-\pi/2}^{\frac{\pi}{2}} x \sin|x|$dx

Q17 $\int_0^{\frac{\pi}{2}} logtanx$ dx

Q18 $\int_{-1}^{1} log\frac{2-x}{2+x}$ dx

Q20 $\int_{-\pi/2}^{\frac{\pi}{2}} (x^3\cos x + \tan^5 x + 1)$ dx

Q21 If f(x) = $\int_0^x tsintdt$, then find f ’(x)

Q22 $\int_0^{\pi/2} cosx\, e^{sinx}$dx

Q23 $\int_0^1 \frac{e^t}{1+t}$dt = a , then find $\int_0^1 \frac{e^t}{\sqrt{1+t^2}}$ dt

Q24 $\int_0^1 log\left(\frac{1}{x} - 1\right)$dx

Q25 $\int \tan^{-1}\sqrt{x}$dx

THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER-8 APPLICATION OF INTEGRALS

Q1 Area bounded by curve cosx =y between x =0 and x = 2π is_____________________________

Q2 Area bounded by curve sinx =y between x =0 and x = 2π is_____________________________

Q3 The area of region bounded by the curves $y = x^2$ and $x = y^2$ is__________________________

Q4 The area of region bounded by the circle $x^2 + y^2 = a^2$is________________________________

Q5 The area of region bounded by the curves y = cosx , y= sinx and the y axis in the first quadrant is__________

THE ASIAN SCHOOL, DEHRADUN

MULTIPLE CHOICE QUESTIONS 2019

MATHEMATICS CLASS – XII CHAPTER-9 DIFFERENTIAL EQUATIONS

Q1 The order of differential equation of all circle s of radius r is ________________

Q2 Find the solution of the differential equation$\frac{dy}{dx}$ + y = e^{-x} , y(0) =0

Q3 Family of y = Ax + A^3, of curves will correspond to a differential equation of order __________________

Q4 A homogeneous differential equation of the type $\frac{dx}{dy}$ = h($\frac{x}{y}$) , can be solved by by which substitution in place of y._________

Q5 The number of arbitrary constants in the general solution of the differential equation of third order is ___________________

Q6 The number of arbitrary constants in theparticular solution of the differential equation of fourth order is ______________

Q7 Find the integrating factor of the differential equation x$\frac{dy}{dx}$- y = e^{-x}

Q8 The number of arbitrary constants in the general solution of the differential equationtanxdx + tanydy is______________

Q9 Thedifferential equation of the family of curves defined by y = A sinx + Bcos x is________________________________

Q10 Order of the differential equation of the family of ellipses having centre on the origin is __________________________

Q11 Find the general solution of the differential equation$\frac{dy}{dx}$ = e^{y-x}

Q12 solution of the differential equation$\frac{dy}{dx}$= 2^{-y}.

Q13 The slope of the tangent to the curve at any point P (x,y) -is $\frac{-x}{y}$. if the curve passes through the point (-3,4(, then find the equation of the curve.

Q14 Solve the differential equationcos$(\frac{dy}{dx}) = a$

Q15 The differential equation of the family of curves defined by y = bcos(x+a) is____________________________

THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER-10 VECTOR ALGEBRA

Q1. The unit vector in the direction of the sum of vectors $\vec{a}$ =2 $\hat{\imath}$ - $\hat{\jmath}$+ 2$\hat{k}$ and $\vec{b}$ = -$\hat{\imath}$ + $\hat{\jmath}$ + 3$\hat{k}$ is :

a) $-\frac{1}{\sqrt{26}}\hat{\imath} + \frac{5}{\sqrt{26}}\hat{k}$ b) $\frac{1}{\sqrt{26}}\hat{\imath} - \frac{5}{\sqrt{26}}\hat{k}$ c) $\frac{1}{\sqrt{26}}\hat{\imath} + \frac{5}{\sqrt{26}}\hat{k}$ d) None of these

Q2. The value of λ for which the vectors 3$\hat{\imath}$ - 6$\hat{\jmath}$ + $\hat{k}$ and 2$\hat{\imath}$ - 4$\hat{\jmath}$ + λ$\hat{k}$ are parallel is :

a) 2/3 b) 3/2 c) 5/2 d) 2/5

Q3. The value of λ for which the vectors $\vec{a}$ = 2 $\hat{\imath}$ + λ $\hat{\imath}$ + $\hat{k}$ and $\vec{b}$ = $\hat{\imath}$ + 2$\hat{\jmath}$ + 3$\hat{k}$ are orthogonal, is :

a) 0 b) 1 c) 3/2 d) -5/2

Q4. The angle between two vectors $\vec{a}$ and $\vec{b}$ with magnitudes $\sqrt{3}$ and 4, respectively, and $\vec{a}$. $\vec{b}$ = 2$\sqrt{3}$ is :

a) $\frac{\pi}{6}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{2}$ d) $\frac{5\pi}{2}$

Q5. The vectors from origin to the points A and B are $\vec{a}$ = 2$\hat{\imath}$ - 3$\hat{\jmath}$+ 2$\hat{k}$ and $\vec{b}$ = 2$\hat{\imath}$ + 3$\hat{\jmath}$+ 2$\hat{k}$, respectively, then the area of triangle OAB is :

a) 340 b) $\sqrt{25}$ c) $\sqrt{229}$ d) 1/2$\sqrt{229}$

Q6. For any vector $\vec{a}$, the value of $\vec{a}$, the value of $(\vec{a}\text{x } \hat{\imath})^2 + (\vec{a}\text{x } \hat{\jmath})^2 + (\vec{a}\text{x } \hat{k})^2$ is equal to :

a) $\vec{a}^2$ b) 3$\vec{a}^2$ c) 4$\vec{a}^2$ d) 2$\vec{a}^2$

Q7. The vectors λ$\hat{\imath}$ + $\hat{\jmath}$+ 2$\hat{k}$, $\hat{\imath}$ + λ$\hat{\jmath}$ -$\hat{k}$ and 2$\hat{\imath}$ - $\hat{\jmath}$+λ$\hat{k}$, are coplanar if :

a) λ = -2 b) λ =0 c) λ=1 d) λ= -1

Q8. The number of vectors of unit length perpendicular to the vectors $\vec{a}$ = 2$\hat{\imath}$ + $\hat{\jmath}$+ 2$\hat{k}$ and $\vec{b}$ = $\hat{\jmath}$ + 3$\hat{\jmath}$+$\hat{k}$ is :

a) one b) two c) three d) infinite

Q9. If $|\vec{a}|$ = 4 and -3 ≤ λ ≤2, then range of $|\overrightarrow{\lambda a}|$ is :

a) [0,8] b) [-12,18] c) [0,12] d) [8,12]

Q10. The projection of a vector $\vec{a}$ = 2$\hat{\imath}$ - $\hat{\jmath}$+ $\hat{k}$ along $\vec{b}$ = $\hat{\imath}$ + 2$\hat{\jmath}$ + 2$\hat{k}$ is :

a) 2/3 b) 1/3 c) 5/3 d) none of these

Q11. The two vectors $\hat{\jmath}$+$\hat{k}$ and 3$\hat{\imath}$ - $\hat{\jmath}$ + 4$\hat{k}$ represents two sides AB and AC, respectively of a triangle ABC. The length of the median through A is :

a) $\frac{\sqrt{34}}{2}$ b) $\frac{\sqrt{48}}{2}$ c) $\sqrt{18}$ d) none of these

Q12. If $\vec{a}$ and $\vec{b}$ are unit vectors, then what is the angle between$\vec{a}$ and $\vec{b}$ for $\sqrt{3}$ $\vec{a}$ - $\vec{b}$ to be unit vector?

a) 30^0 b) 45^0 c) 60^0 d) 90^0

Q13. The unit vector perpendicular to the vectors $\hat{\imath}$-$\hat{\jmath}$ along $\hat{\imath}$+$\hat{\jmath}$ forming a right-handed system is :

a) $\hat{k}$ b) -$\hat{k}$ c) $\frac{\hat{\imath}-\hat{\jmath}}{\sqrt{2}}$ d) $\frac{\hat{\imath}+\hat{\jmath}}{\sqrt{2}}$

Q14. If $\vec{a}$ is unit vector and ($\vec{x}$- $\vec{a}$). ($\vec{x}$+ $\vec{a}$)=8, then find$|\vec{x}|$

a) 3 b) -3 c) ∓3 d) none of these

Q15. If $|\vec{a} + \vec{b}|$ = 60, $|\vec{a} - \vec{b}|$ = 40 and $|\vec{b}|$ = 46 then $|\vec{a}|$

a) 22 b) 20 c) 24 d) none of these

THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER-11 THREE DIMENSIONAL GEOMETRY

Q1. A plane passes through points (2,0,0), (0,3,0) and (0,0,4). the equation of plane is :
a) $\frac{x}{3}+\frac{y}{2}+\frac{z}{4}=1$ b) $\frac{x}{2}+\frac{y}{3}+\frac{z}{4}=1$ c) $\frac{x}{3}+\frac{y}{4}+\frac{z}{3}=1$ d) $\frac{x}{2}+\frac{y}{3}+\frac{z}{4}+1=0$
Q2. If the direction cosines of a line are k,k,k then :
a) K>0 b) 0<k<l c) k = 1 d) k = $1/\sqrt{3}$ or $-1/\sqrt{3}$
Q3. Distance between the two planes : 2x + 3y + 4z = 4 and 4x +6y + 8z = 12 is :
a) 2 units b) 4 units c) 8 units d) $2/\sqrt{29}$ units
Q4. The planes 2x –y + 4z = 5 and 5x – 2.5y + 10z =6 are :
a) perpendicular b) parallel c) intersect y- axis d) passes through (0,0,5/4)
Q5. Find the angle between the lines whose direction ratio are a,b,c, and b-c, c-a, a-b.
a) 45^0 b) 60^0 c) 90^0 d) none of these
Q6. If a lines an angle of 30^0, 60^0, 90^0 with the positive direction of x,y,z areas, respectively then find its direction cosines.
a) $\left(\frac{\sqrt{3}}{2},\frac{1}{2},0\right)$ b) $\mp\left(\frac{\sqrt{3}}{2},\frac{1}{2},0\right)$ c) $-\left(\frac{\sqrt{3}}{2},\frac{1}{2},0\right)$ d) none of these
Q7. The x coordinate of a point on the line joining the points Q (2,2,1) and R (5,1,-2) is 4. find its z- coordinate :
a) -1 b) 2 c) 0 d) none of these
Q8. If a line makes an angle of α,β,γ with the positive directions of the coordinate axes, then the value of $\sin^2\alpha+\sin^2\beta+\sin^2\gamma$:
a) 1 b)2 c)0 d) none of these
Q9. If three points P,Q,R whose coordinates are (3,2,-4), (5,4,-6) and (9,8,-10) are collinear then ratio in which Q divides PR is :
a) 1:3 b) 1:2 c) 1:4 d) none of these
Q10. The angle between two diagonals of a cube is :
a) $\cos^{-1} 1/3$ b) $\cos^{-1} 1/2$ c) $\cos^{-1}$ ¼ d) none of these
Q11. Find the value of p and q so that the point (p,q,1), (-1,4,-2) and (0,2,-1) are collinear :
a) 2,-2 b) -2,2 c) 2,2 d) none of these
Q12. The lines x = ay + b, z = cy + d and x = a'y + b' , z = c'y + d' are perpendicular if :
a) bb' + cc' + 1 =0 b) aa' + cc' + 1=0 c) aa' + bb' + 1 =0 d) none of these

THE ASIAN SCHOOL, DEHRADUN
MULTIPLE CHOICE QUESTIONS 2019
MATHEMATICS CLASS – XII CHAPTER-12 LINEAR PROGRAMMING

Q1. Corner points of the feasible region determined by the system of linear constraints are (0,3) , (1,1) and (3,0). Let Z= px + qy, where p,q>0. Condition on p and q so that the minimum of Z occurs at (3,0) and (1,1) is :

a) p = 2q b) p = q/2 c) p = 3q d) p = q

Q2. Corner points of the feasible region determined by the system of linear constrains are (0,10), (5,5), (15,15) and (0,20). Let Z = px + qy, where p,q>0. Condition on p and q so that the minimum of Z occurs at (15,15) and (0,20) is :

a) p = 2q b) p =q c) p = 3q d) q = 3p

Q3. Which of the following is not a convex set?

a) A= {(x,y) : $3x+4y\leq 12$}
b) A = {(x,y): y=4) }
c) A = {x,y): $x^2+y^2 \leq 9$}
d) A = {(x,y) : $3x^2 + 5y^2 \leq 15$}

Q4. The maximum value of Z = 3x + 2y subjected to $x +2y \leq 10$, $3x+y\leq 15$ and $x,y \geq 0$ is :

a) 18 b) 35 c) 20 d) none of these

Q5. Maximize Z = 11x+7y

$x \leq 3$
$y\leq 2$
$x,y\geq 0$
$x,y\geq 0$

a) 37 b) 30 c) 47 d)none of these

Q6. Find the minimum and maximum value of Z = y + 5x, under the constraints $y – x \leq 3$, $y – 6x\geq - 12$and $x,y \geq 0$

a) Max. = 21 and min = 5
b) max = 21 and min = 0
c) max = 33 and min = -12
d) max = 20 and min = 15

Q7. The maximum of Z = -x + 2y subject to $x \geq 3$, $x + y\geq 5$, $x + 2y \geq 6$, $x,y\geq 0$ occurs at :

a) one point b) two points c) multiple points d) does not occur

Q8. The feasible region of Z = x+y subject $x-y\leq -1$, $-x+y \leq 0$, $x,y\geq 0$ is :

a) convex region b) unbounded region c) no feasible region d) none of these

Q9. The solution set of the inequation $x+y\leq 3$ is :

a) half plane that contains origin
b) open half plane not containing origin
c) xy= plane except the points lying on x+y = 3
d) none of these

Q10. What is the maximum value of 3x+2y at the corner points (0,7), (2,3), (4,1), (8,0) of the convex polygonal region?

a) 24 b) 14 c) 6 d) none of these

Q11. If the objective function of a LPP is Min Z = 0.6x + 0.4y and corner points are (0,280), (100,80) and $\left(\frac{700}{3},0\right)$ then minimum value of Z is :

a) 140 b) 92 c) 142 d) none of these

Q12.Maximize Z = 3x+4y

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

a) 16 b) 12 c) 4 d) none of these

Q13. Minimize Z = 3x + 5y

$2x+3y \leq 6$
$x, y \geq 0$

a) 6 b) 10 c) 5 d) none of these

Q14. If the feasible region is unbounded, then a maximum or a minimum may or may not exist. However, if it exists, it must occur at a………………

Q15. Any point outside the feasible region is called as…………………