SUBJECT MATHEMATICS CLASS XII

REVISION OF 1 MARKS QUESTIONS

CHAPTER
RELATIONS AND FUNCTIONS

CHOOSE THE CORRECT ANSWER:

1. Function f: R-> R , $f(x) = 4x-5$ is
   (a) One-one Only (b) Onto Only (c) One-one onto (d) None of these
2. Relation given by R={(1,1), (1,2), (2,1), (2,2)} is
   (a) Reflexive Only (b) Symmetric Only (c) Transitive only (d) Equivalence relation
3. Let the relation of perpendicularity on the set of all straight line in a plane , Then
   (a) R is Reflexive (b) R is Symmetric (c) R is Transitive (d) R is Equivalence
4. Function f: R-> R $f(x) = \frac{7x-3}{5}$, $x \in$ R is :
   (a) One-one Only (b) Onto Only (c) One-one onto (d) None of these
5. Let R is the relation in the set N given by {(a,b) : a = b-2, b > 6) Then
   (a) (2,4) ∈R (b) (3,8) ∈ R (c) (6,8) ∈ R (d) (8,7) ∈R
6. f : N->N given by $f(2)=f(3)=1$ and $f(x)=x-2$ $x>3$ is
   (a) Many One onto (b) One-One Onto (c) Many One into (d) One-One into
7. Let A={1,2,3} Then the number of equivalence relation containing (1,2) is
   (a) 1 (b) 2 (c) 3 (d) 4
8. If f(x) = $\begin{cases} 3x-1 & , \quad x \geq 1 \\ -x & , \quad x < 1 \end{cases}$, then f(-2) is
   (a) 2 (b) -2 (c) -7 (d) 5
9. The domain of the function $\frac{x}{|x|}$ is
   (a) R-{0} (b) R (c) Z (d) W
10. The Domain of the function defind by f(x) = $\sqrt{9-x^2}$ is
   (a) (-3,3) (b) [-3,3] (c) [0,3] (d) [-3,0]

TRUE /FALSE

1)The set of first co-ordinates of relation is called its domain.

2) Every function is a relation but every relation is not a function.

3)If O(A) = O(B)=3 then number of onto function from A to B is 9.

4) The range of Relation R={(-1,1),(1,2),(-2.4),(2,4)} is {-1,1,-2,2}.

5) The relation of similar triangles is a plane is an equivalence relation.

FILL UPS:

1) A relation from set X to set Y is subset of _____

2) F ={(1,3),(2,4),(3,5),(4,6)} is _____ function.

3) A relation R on a set S is called _____ relation if it is reflexive, symmetric and transitive.

4) If (a,b) , (b,c) ∈ R ⇨ (a,c) ϵ R then R is _____ relation.

5) If U is universal relation from A to B the U equal to .

ANSWERS

CHOOSE THE CORRECT ANSWER:

1. c 2. d 3. a 4. c 5. C 6.a 7. b 8.b 9.a 1 0.b

TRUE/FALSE : 1. True 2. True 3. False 4.False 5.True

FILL UPS : 1. X x Y 2. One –one 3. Equivalence 4 Transitive 5.AxB

CHAPTER
INVERSE TRIGNOMETERY FUNCTIONS

CHOOSE THE CORRECT ANSWER :

1 $\tan^{-1}\sqrt{3} - \sec^{-1}(-2)$ **is equal to**

(a) π (b) –π/ 3 (c) π/ 3 (d) 2π/ 3

2. Principal value of $tan^{-1}(1)$ **=**

(a) π /4 (b) π /2 (c) π/ 3 (d) none of these

3) **Principal value of** $\sin^{-1}\left(\frac{-1}{2}\right)$**is :**

a) $\frac{5\pi}{6}$ **b)** $\frac{\pi}{6}$ **c)** $-\frac{\pi}{6}$ **d)** $-\frac{5\pi}{6}$

4) cos $^{-1}(\frac{\sqrt{3}}{2})$ **is**

(a) 0 (b) $\frac{\pi}{6}$ **(c)** $\frac{\pi}{2}$ **(d)** $\frac{\pi}{3}$

5) If $sin^{-1}x$ **= y, then**

(a) 0≤y≤π (b) –π/ 2≤ y ≤π/ 2 (c)0<y<π (d) −π /2<y< π

6) If sec^{-1}**=y, then**

(a) [0, π] – { π/ 2 } (b) [0, π] (c) [-1,1] (d) none of these

7) If $cot^{-1}x$**=y, then**

(a) (0, π) (b) [0, π] (c) [-1,1] (d) none of these

8) Domain of the function f(x) = $^{-1}(x)$ **is**

(a) [–1, 1] (b) (-1,1) (c) [–1, 2] (d) [–2, 1]

9) Domain of the function f(x) = $^{-1}(x)$ **is**

(a) $\mathbb{R}$ **(b)** $\mathbb{C}$ **(c)** $\mathbb{Z}$ **(d)** $\mathbb{Q}$

10) $cot^{-1}(-x)$ **is equal to**

(a) $cot^{-1}(x)$ **(b)π –**$cot^{-1}(x)$ **(c)** $cos^{-1}(x)$ **(d) none of these**

FILL UPS :

1)Principal value of $cosec^{-1}$ (2)= _____ .

2)The value of $\tan^{-1}(-1)$ is _____

3)Principal value of $\sin^{-1}(-\frac{\sqrt{3}}{2})$ is _____.

4).If $\sin^{-1}(x)$ + cos^{-1} (1/ 4) = π/ 2 , then x is equal to _____ .

5). If $\sin^{-1}$(1/ 5) + $cos^{-1}(x)$ = π /2 , then x is equal to _____ .

6). {$cosec^{-1}(x)$ + $sec^{-1}(x)$} = _____ .

7) Value of cos^{-1} (1 /2) + 2 sin^{-1}(1/ 2) = _____ .

8) Principal value of $cot^{-1}(\sqrt{3})$ is_____ .

TRUE FALSE :

1. **2 $\tan^{-1}x = \tan^{-1}(\frac{2x}{1-x^2})$ …… T/F**
2. **2 $\tan^{-1}x = \cos^{-1}(\frac{1-x^2}{1+x^2})$ …… T/F**
3. **2 $\tan^{-1}x = \sin^{-1}(\frac{2x}{1+x^2})$ …… T/F**
4. **$sin^{-1}(x)$ + $cos^{-1}(x)$ = π 4 …….T/F**
5. **$sec^{-1}(-x)$ = π – $sec^{-1}(x)$…….T/F**

ANSWERS

CHOOSE THE CORRECT ANSWER

1) b 2) a 3) c 4) b 5) b 6) a 7) a 8) a 9) a 10) b

FILL UPS : 1) $\frac{\pi}{6}$ 2) $-\frac{\pi}{4}$ 3) $-\frac{\pi}{3}$ 4) $\frac{1}{4}$ 5) $\frac{1}{4}$ 6) 1 7) $\frac{2\pi}{3}$ 8) $\frac{\pi}{6}$

TRUE/ FALSE : 1)True 2) True 3) True 4) False 5) True

CHAPTER
MATRICES AND DETERMINANT

CHOOSE THE CORRECT ANSWER:

Q.1 If $\begin{bmatrix} x+y & 2 \\ 2y & 6 \end{bmatrix} = \begin{bmatrix} 7 & 2 \\ 4 & 6 \end{bmatrix}$**,then x equals**

(a) 6 (b) 4 (c) 5 (d) 2

Q.2If A is non – singular matrix of order 3 and IAI =2 then Iadj.AI equals

(a) 4 (b) 6 (c) 8 (d) none of these

Q.3 if $\begin{bmatrix} 3x+7 & 5 \\ y+1 & 2 \end{bmatrix} = \begin{bmatrix} 1 & y-2 \\ 8 & 2 \end{bmatrix}$ **, then y equals**

(a) 7 (b) -7 (c) 2 (d) -2

Q.4 If D = $\begin{bmatrix} 7 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ **,then matrix D equals**

(a) Scalar matrix (b) diagonal matrix (c) Unit matrix (d) None of these

Q.5 The number of all possible matrices of order 3 X 3 with each entry 0 or 1 is

(a) 27 (b) 18 (c) 81 (d) 512

Q.6 The number of all possible matrices of order 2 X 2 with each entry 0,1 or 2

Is : (a) 27 (b) 18 (c) 81 (d) 512

Q.7 A + B = C where A and C are matrices of order 3 X 2 ,then order of B is

(a) 3 X 2 (b) 2 X 3 (c) 2 X 2 (d) 3 X 3

Q.8 If A= $\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$**,then A(adjA) equals**

(a) $\begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$ **(b)** $\begin{bmatrix} 0 & 3 \\ 3 & 0 \end{bmatrix}$ **(c)** $\begin{bmatrix} 1 & 3 \\ 3 & 1 \end{bmatrix}$ **(d)** $\begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$

Q.9 If $\begin{vmatrix} x & 4 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 6 & 2 \\ 18 & 6 \end{vmatrix}$**,then x equal to**

(a) 6 (b) ±6 (c) -6 (d) 0

Q.10 If A is any square matrix then A + A^T is a :

(a) Skew symmetric matrix (b) Symmetric matrix

(c) Null matrix **(d) Identity matrix**

FILL UPS :

1) **If A is an invertible matrix of order 3 and $|A|$ =5, then the value of $|adjA|$ Is_____.**

2) **If $\begin{bmatrix} 2x-y & 5 \\ 3 & y \end{bmatrix}=\begin{bmatrix} 6 & 5 \\ 3 & -2 \end{bmatrix}$, the x equals _____.**

3) **If AB = C where B and C are matrices of order 3 X 5 , then order of A is_____.**

4) **If A= diag[-2 4 5] then det A is equal to _____.**

5) **If A is invertible matrix of order 3x3 then $IA^{-1}I$ _____.**

TRUE/ FALSE :

1) **Any square matrix can be expressed as the sum of a symmetric and skew symmetric matrix.**

2)**The number of all possible matrices of order 3 X 3 with each entry 0 or 1 is 512**

3)**The value of determinant remains unchanged if its rows and coloumns are interchanged.**

4) **If is matrix of order 3x4 then each column of matrix A contains 3 elements**

5) **If A = [0 1 3] then $A A^T$ = [0 1 9].**

ANSWERS

CHOOSE THE CORRECT ANSWER :

1) 5 2) 4 3) 7 4) diagonal matrix 5) 512

6) 81 7) 3x2 8) $\begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$ 9) ±6 10) Symmetric matrix

FILL UPS : 1) 25 2) 2 3) 3X3 4) -40 5) $\frac{1}{|A|}$

TRUE/ FALSE: 1) True 2) True 3) True 4) True 5) False

CHAPTER

CONTINUITY AND DIFFERENTIABILITY

CHOOSE THE CORRECT ANSWER

1) If f(x)= $\begin{cases} mx-1 & , \quad x \le 5 \\ 3x-5, & \quad x > 5 \end{cases}$ **is continuous then value of m is**

a) $\frac{11}{5}$ **b)** $\frac{5}{11}$ **c)** $\frac{5}{3}$ **d)** $\frac{3}{5}$

2) If function defined by f(x) = $\begin{cases} \frac{sin3x}{2x} & , \quad x \neq 0 \\ k+1 & , \quad x=0 \end{cases}$ **is continuous at x=0 ,then value of k is:**

a) 0 **b)** $\frac{3}{2}$ **c)** $\frac{1}{2}$ **d) 1**

3) If y= log (sinx) then at x=π/4 $\frac{dy}{dx}$ **is**

a) 0 **b) -1** **c) 1** **d)** $\sqrt{2}$

4) Derivative of ($\tan^{-1} x$ + $\cot^{-1} x$) w.r.t.x is

a) -1 **b) 0** **c) 1** **d)2**

5) $\lim_{x \to 0} \left(\frac{e^x-1}{x}\right)^n$ **is equal to**

(a) 0 **(b) 1** **(c) e** **(d) 2**

6) Derivative of $\sin^{-1}(\cos x)$ **w.r.t. x is :**

(a) -1 **(b) 1** **(c) cos x** **(d) sin x**

7) $\log_{x \to 0} \frac{\sin 2x}{2x}$ **is equal to**

(a) 0 **(b) 1** **(c) e** **(d) 2**

8) $\frac{d}{dx}(e^{2x})$ **=**

(a) $2e^{2x}$ **(b) 2x** **(c) x** **d)** x^2

9) The derivative of f(x) = x^2 **at x = 4**

(a) 2 **(b) 0** **(c) 8** **(d) 1**

10) $\frac{d}{dx}$ { $\tan^{-1}(e^x)$ } is

(a) 0 (b) $\frac{e^x}{1+e^x}$ (c) $\frac{e^x}{1+(e^x)^2}$ (d) $e^x \sec^{-1}x$

FILL UPS :

1) If y = 500x then $\frac{dy}{dx}$ = _____.

2) If y= $\sin 2x$, then $\frac{d^2y}{dx^2}$ at x=$\frac{\pi}{2}$ is equal to _____ .

3) If y= cos x ,then $\frac{d^2y}{dx^2}$ at x=0 is equal to_____ .

4) $\frac{d}{dx}$ ($\sin^{-1}x^2$) =_____ .

5) If $y=x^a$,a∈R then $\frac{dy}{dx}$ is_____ .

TRUE/ FALSE :

1. If y= tan x then $\frac{dy}{dx}$ = sinx
2. The derivative of f(x) = $|x|$ is 1.
3. If y = $\sin^{-1} x$, then $\frac{dy}{dx}$ = $\cos^{-1} x$
4. A continuous function is differentiable.
5. If $x=at^2$,y=2at then dy /dx = 1/ t^2

ANSWERS

CHOOSE THE CORRECT ANSWER :

1) $\frac{11}{5}$ 2) $\frac{1}{2}$ 3) -1 4) 0 5) 1 6) -1

7) 1 8) $2e^{2x}$ 9) 8 10) $\frac{e^x}{1+(e^x)^2}$

FILL UPS : 1) $\frac{dy}{dx}$ = 500 2) 0 3) -1 4) $\frac{2x}{\sqrt{1-x^4}}$ 5) ax^{a-1}

TRUE / FALSE : 1) False 2) True 3) False 4) True 5) False

CHAPTER

APPLICATION OF DERIVATIVES

CHOOSE THE CORRECT ANSWER :

1) The maximum value of $[x(x-1)+1]^{\frac{1}{3}}$, 0≤ x ≤1is

a) $\frac{1}{3}^{1/3}$ **b)** $\frac{1}{2}$ **c) 1** **d) 0**

2) For all real values of x, the minimum value of $\frac{1-x+x^2}{1+x+x^2}$ **is**

a) 0 **b) 1** **c) 3** **d)**$\frac{1}{3}$

3) If x is real, the minimum value of x^2**-8x+17 is**

a) -1 **b) 0** **c) 1** **d) 2**

4) The function f(x)=$2x^3$**-3**x^2**-12x+4 has**

a) two points of local maxima **b) two points of local minima**

c) one maxima or minima **d) no maxima or minima**

5) The maximum value of $\sin x.\cos x$ **is**

a) $\frac{1}{4}$ **b)** $\frac{1}{2}$ **c)** $\sqrt{2}$ **d)**$\sqrt[2]{2}$

6) At x= $\frac{5\pi}{6}$ **f(x) =2**$\sin 3x$**+3**$\cos 3x$ **is**

a) maximum **b) minimum**

c) zero **d) neither maximum nor minimum**

7) Maximum slope of the curve y=$-x^3+3x^2+9x-27$ **is**

a) 0 **b) 12** **c) 16** **d) 32**

8) The interval for which the function f(x) =x^2**-6x+3 is strictly increasing is**

a) (3,∞) **b) (-3,3)** **c)(-∞,-3)** **d)(-3,∞)**

9)The interval for which the function f(x) =x^2-8x+7 is strictly increasing is

a) (4,∞) **b) (-4,4)** **c)(-∞,-4)** **d)(-4,∞)**

10) Which of the following functions is decreasing on [0, π/2]

a) $\sin 2x$ b) $\tan x$ c) $\cos x$ d) $\cos 3x$

11) The function f(x) =$\tan x$-x

a) always increases b)always decreases

c)never increases d)sometimes increase and sometimes decreases

12) y =x(x-3)2 decreases for the value of x given by

a)1<x<3 b) x<0 c) x>0 d) 0<x<$\frac{3}{2}$

13). The tangent to the curve y=e²x at the point (0,1) meets the X axis at

(a) (0,1) (b) (2,0) (c) (-1/2,0) (d) (-2,0)

14). If the curve ay+x²=7 and x³=y cut orthogonally at (1, 1) then the value of a is

(a) 1 (b) 0 (c) -6 (d) 6

15). The curves y=a e^{-x} and y=b e^{x} are orthogonally, if

(a) a=b (b) a= -b (c) ab=1 (d) ab= -1

16). The line y = x+1 is a tangent to the curve y²= 4x at the point

(a) (-1, 2) (b) (1, 2) (c) (1,-2) (d) (2, 1)

17). The point on the curve where tangent with curve y²=x makes an angle of 45° clockwise with X-axis is

(a) (-1/2 , 1/4) (b) (1/4,-1/2) (c) (-2,4) (d) (4,-2)

18) The equation of normal to the curve Y=Sin x at (0, 0) is

(a) x =0 (b) y =0 (c) x + y =0 (d) x– y =0

19) The angle between the curve y²=x and x²=y at (1, 1) is

(a) 60° (b) $\tan^{-1}(4/3)$ (c) $\cot^{-1}(4/3)$ (d) 90°

20). The slope of the normal to the curve $y= 2x^2+3 \sin x$ at x=0 is

(a) 3 (b) 1/3 (c) -3 (d) -1/3

TRUE/ FALSE :

1)The maximum value of f(x) = $-x^2$, xεR is 4

2) Maximum value of the function $\sin x + \cos x$ is 2

3) The function $f(x) =x^3-3x^2+3x-100$ is increasing on R

4)The function f(x) =7x-3 is a strictly decreasing function on R

5)) The function $f(x) = e^{2x}$ is increasing on R

ANSWERS

CHOOSE THE CORRECT ANSWER

1) c 2) d 3) c 4) c 5) b 6) a 7) b 8) a 9) c 10) c

11) a 12) a 13). c 14). d 15). c 16). b 17). b 18). c 19). c 20). d

TRUE / FALSE

1) False 2) True 3) True 4) False 5) True

CHAPTER : INTEGRATION

CHOOSE THE CORRECT ANSWER :

1) $\int$ Sin^2 x-Cos^2 x/ Sin^2 xCos^2 x dx is equal to

a)Tanx+Cotx+c **c) -Tanx+Cotx+c**

b)Tanx+Cosecx+c **d) Tanx+Secx+c x.**

2) $\int e^x$(cos x – sin x) dx is equal to

a) e^xcos x +c **b) e^xsinx +c** **c) -e^x cosx +c** **d) -e^xsinx +c**

3) $\int \frac{1}{1+x^2}$ dx is equal to:

a) tan^{-1} x +c **b) sin^{-1} x +c** **c) cos^{-1}x+c** **d) sec^{-1}x +c**

4) $\int 2^x$dx is equal to:

(a) 2^x + c **(b) 2^x log 2 + c** **(c) $\frac{2^x}{log 2}$ + c** **(d) None of these**

5) $\int_{-1}^{1} x^{17} cos^4 x dx$ is equal to:

(a) $\frac{1}{9}$ **(b) $\frac{-1}{9}$** **(c) 0** **(d) $\frac{1}{8}$**

6) $\int$ tanx dx is

(a) log |sinx|+c **(b) log |cotx|+c**

(c) log |cosx|+c **(d) – log |cosx|+c**

7) $\int e^x$ (tan^{-1}x + $\frac{1}{1+x^2}$) dx is equal to

(a) e^x + tan^{-1}x +c **(b) e^x . $\frac{1}{1+x^2}$ + c**

(c) e^x + c **(d) $\frac{1}{1+x^2}$ +c**

8) $\int_0^1 \frac{dx}{1+x^2}$ is equal to

(a) $\frac{\pi}{3}$ **(b) $\frac{\pi}{4}$** **(c) $\frac{\pi}{12}$** **(d) $\frac{7\pi}{12}$**

9) The anti- derivative of e^{2x} is equal to :

a) 2 e^{2x} b) $\frac{1}{2}$ e^{2x} c) 0 d) none of these

10) The anti- derivative of sin 4x is equal to :

a) 4 cox 4x b) - $\frac{1}{4}$ cos 4x c) 0 d) none of these

FILL UPS :

1) Integration is _____ process of differentiation.

2) $\int \frac{1}{2x+5} dx$ is _____ .

3) $\int x log x \, dx$ = _____ .

4) $\int (\sin x + \cos x) dx$ is equal to _____.

5) $\int_{-a}^{a} f(x) dx$ = 0 if f is an _____ function.

TRUE/FALSE :

1) $\int \frac{1}{2x+7}$ dx is equal to log(2x+7) .

2) $\int \frac{1}{1-x^2} dx = \sin^{-1} x + c$

3) $\int_{-a}^{a} f(x)$ dx = 0 if f is an odd function.

4) All functions are integrable .

5) ∫Cosecx dx= - log |Cosecx + Cotx| + c

ANSWERS

CHOOSE THE CORRECT ANSWER:

1) b 2) c 3) c 4) c 5) c 6) d 7) a 8) b 9) a 10) a

FILL UPS

1) Inverse 2) 2 log |2x+5| 3) $\frac{x^2}{4}$ (2 logx-1) 4) – cosx + sinx

2) 5) odd function

TRUE/FALSE

1) False 2) False 3) True 4) False 5) True

CHAPTER
DIFFERENTIAL EQUATIONS

CHOOSE THE CORRECT ANSWER :

1) Order of differential equation $\frac{d^2y}{dx^2} - \left(\frac{dy}{dx}\right)^3 + y = 0$

a) 3 b) 2 c) 0 d) 1

2) The degree of the differential equation $\frac{d^2y}{dx^2} - \left(\frac{dy}{dx}\right)^3 + 3y = 0$ **is**

(a) 2 (b) 3 (c) 0 (d) 1

3) The general solution of the equation ydx-xdy=0 is

a) $xy=c$ **b)** $x=cy^2$ **c)** $y=cx$ **d)** $y=cx^2$

4) Integrating factor of differential equation $\frac{dy}{dx} + y = 2x$ **is :**

(a) $\frac{1}{x}$ **(b) x (c)** e^x **(d)** e^{-x}

5) The order of differential equation of all circles of given radius a is

a) 1 b) 2 c) 3 d) 4

6) Family $y=Ax + A^3$ **of curves will correspond to a differential equation of order**

a) 3 b) 2 c) 1 d) not defined

7) the solution of differential equation $2x.\frac{dy}{dx} - y = 3$ **represents a family of**

a) straight line b) circles c) parabolas d) ellipses

8) Differential equation representing the curve y=sinx is:

a) $y_2 - y = 0$ **b)** $y_2 - y_1 = 0$ **c)** $y_2 + y = 0$ **d)** $y_1 + y = 0$

FILL UPS :

1)Differential equation representing the family of curve y=mx+c is given by _____.

2)) The number of arbitrary constants in the particular solution of a differential equation of third order are _____

3) The degree of differential equation $\frac{d^2y}{dx^2} + e^{\frac{dy}{dx}} = 0$ is_____.

4) The general equation of differential equation ydx – xdy= 0 is _____.

5) The general equation of differential equation ydx + xdy= 0 is _____.

TRUE/ FALSE :

1) Number of arbitrary constants in the particular solution of a differential equation of order 2 is 2.

2) $y^2dx + (x^2 - xy - y^2) dy = 0$ is a homogenous equation

3) Intergrating factor of differential equation $\frac{dy}{dx}$ -y = cos x is e^x.

4) Order of differential equation representing the family of ellipse having centre at origin and foci on x-axis is two.

5) Order of differential equation representing the family of parabolas $y^2 = 4ax$ is one.

ANSWERS

CHOOSE THE CORRECT ANSWER:

1) 2 2) 1 3) y = cx 4) e^x 5) 2 6) 1 7) parabolas 8) $y_2 + y = 0$

FILL UPS : 1) $\frac{d^2y}{dx^2} = 0$ 2) 0 3) not defined 4) y = cx 5) $y = cx^2$

TRUE / FALSE : 1) False 2) True 3) False 4) True 5) True

CHAPTER : VECTORS

CHOOSE THE CORRECT ANSWER :

1) Direction ratios of vector 2 î+3ĵ +4k are :

a) <2,3,4> b) < 3,4,2> c) <4,3,2> d) < 3,2,4>

2) If $\vec{a} = 2\hat{\imath} + \lambda\hat{\jmath} + \hat{k}$ and $\vec{b} = 3\hat{\imath} - 2\hat{\jmath} + 8\hat{k}$ are perpendicular to each other the value of λ is :

(a) 6 (b) 7 (c) 8 (d) 16

3) If θ is the angle between any two vectors $\vec{a}$ and $\vec{b}$ then $|\vec{a}\,.\,\vec{b}|$= $|\vec{a} \times \vec{b}|$when θ equals to

(a) 0 (b) $\frac{\pi}{4}$ (c) $\frac{\pi}{2}$ (d) π

4) The angle between î –ĵ and ĵ –$\hat{k}$ is

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

5) The magnitude of vector 5î -2ĵ+ 3$\hat{k}$ is

(a) 38 (b) $\sqrt{38}$ (c) 1 (d) 12

Q.6 If$\vec{a}$ is any vector then $\vec{a} \times \vec{a}$ is

(a) 1 (b) 0 (c) $|\vec{a}|^2$ (d) $\vec{0}$

Q.7 Direction-ratios of vector 4$\hat{\imath}$+2$\hat{\jmath}$+3$\hat{k}$ are :

(a) $< 4,2,3 >$ **(b)** $< 2,3,4 >$ **(c)**$< 3,4,2 >$ **(d)** $< 2,4,3 >$

Q.8 If 2 $(\vec{a}.\vec{b})$ = $\sqrt{3}|\vec{a}||\vec{b}|$, then the angle between n $\vec{a}$ and $\vec{b}$ is equal to

(a) 30° (b) 45° (c) 60° (d) 90°

Q.9 If $|\vec{a}|$=1,$|\vec{b}|$=2 and $\vec{a}.\vec{b}$=1, then the angle between $\vec{a}$ and $\vec{b}$ is:

(a) 0 (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{4}$

Q.10 If $\vec{a}.\vec{b}$ = 0 ,then $\vec{a}$ is,

(a) Proper vector (b) Free vector (c) Null vector (d) None of these

FILL UPS :

1) **Position vector of mid point of vector joining the points P(2,3,4) and Q (4,1,-2) is --------.**
2) **The projection of $\vec{a}$ = $2\hat{\imath}+3\hat{\jmath}+2\hat{k}$ on $\vec{b}=\hat{\imath}+2\hat{\jmath}+\hat{k}$ is_____.**
3) **Direction – cosines of x-axis are _____ .**
4) **If α ,β, γ are directions – angles of a line , then cos2 α + cos2 β +cos2 γ = _____.**
5) **Direction ratios of a line perpendicular to the plane 2x + 3y + 4z = 7 are _____ .**

TRUE / FALSE :

1) **Scalar product of two perpendicular vectors is zero.**
2) **The direction ratios of the line joining the points (-2,1,0) and (3,2,1) are < 5,1,1>**
3) **Two collinear vectors are always equal in magnitude.**
4) **If $\vec{a}$ = $2\hat{\imath}+\hat{\jmath}-2\hat{k}$,then l $\vec{a}$ l =5.**
5) **Vectors product of two parallel vectors is zero.**

ANSWERS

Choose the correct answer:

1) <2,3,4> 2) 7 3) $\frac{\pi}{4}$ 4) $\frac{2\pi}{3}$ 5) $\sqrt{38}$

6) 0 7) $< 4,2,3 >$ 8) 30° 9) $\frac{\pi}{3}$ 10) Null vector

FILL UPS

1) $3\hat{\imath}+2\hat{\jmath}+\hat{k}$ 2) $\frac{5\sqrt{6}}{3}$ 3) $< 1,0,0 >$ 4) -1 5) $< 2,3,4 >$

TRUE / FALSE :

1) True 2) True 3) False 4) False 5) True

CHAPTER
LINEAR PROGRAMMING

CHOOSE THE CORRECT ANSWER :

1) **The point which does not lie in half plane $2x-3y-6\leq 0$**
   a) (2,0) b) (0,3) c) (4,0) d) (2,2)

2) **The point which lies in half plane $3x-y\geq 3$**
   a) (0,0) b) (2,0) c) (1,0) d) (0,1)

3) **The quandrat represents $x\geq 0, y\leq 0$**
   a) 1^{st} b) 2^{nd} c) 3^{rd} d) 4^{th}

4) **The point whch does not lie in half plane of $x\geq 2y$ is:**
   a) (2,0) b) (5,1) c) (6,2) d) (1,2)

5) **The point which lies in half plane of $x-3y\leq 3$**
   a) (1,0) b(4,0) c) (8,1) d) (9,2)

FILL UPS

i. **In LPP , the linear inequalities on the variables are called _____.**
ii. **Maximum value of $z = 4x + 2y$ for the constraint $x+y\leq 4$, $x \geq 0$ $y\geq 0$ is _____.**
iii. **All points of feasible region are _____ .**
iv. **In an LPP ,the objective function is always _____ .**
v. **The common region determined by all the linear constraints of a LPP is called the _____ region.**
vi. **A feasible region of a system of linear inequalities is said to be _____ if it can be enclosed within a circle.**
vii. **A corner point of a feasible region is a point I the region which is the _____ of boundary lines.**
viii. **The feasible region for no.LPP is always a _____ polygon .**

ANSWERS

Choose the correct answer :

1) (4,0) 2) (2,0) 3) 4^{th} quadrant 4) (1,2) 5) (1,0)

FILL UPS:

1) linear constraints 2) 16 3) feasible solution 4) linear
5) feasible 6) bounded 7) intersection 8) convex

CHAPTER
THREE DIMENSIONAL GEOMETRY

CHOOSE THE CORRECT ANSWER:

Q.1 If α, β, γ are the angles which a line makes with the axes respectively then $\sin^2\alpha + \sin^2\beta + \sin^2\gamma$ equals :

(a) 0 (b) 1 (c) 2 (d) None of these

Q.2 The equation of the line is $\frac{2x-5}{4} = \frac{y+4}{3} = \frac{6-z}{6}$,then the d.c's of line parallel to this line are :

(a) $\langle \frac{4}{7}, \frac{3}{7}, \frac{6}{7} \rangle$ (b) $\langle \frac{2}{7}, \frac{3}{7}, \frac{-6}{7} \rangle$ (c) $\langle \frac{-2}{7}, \frac{3}{7}, \frac{6}{7} \rangle$ (d) None of these

Q.3 If the line makes angles $90°, 135°, 45°$ with X,Yand Z axes repectively then its d.r's are :

(a) $\langle 1, -1, 1 \rangle$ (b) $\langle 0, -1, 1 \rangle$ (c) $\langle -1, 0, 1 \rangle$ (d) $\langle 0, -1, 1 \rangle$

Q.4 If two lines are parallel then angle between them is :

(a) 0° (b) 45° (c) 90° (d) None of these

Q.5 Line $\frac{-x-2}{1} = \frac{y+3}{2} = \frac{2z-6}{3}$ passes through the point :

(a) (-2,3,6) (b) (2,3,-6) (c) (-2,-3,3) (d) (2,3,-3)

Q.6 Intercepts cut off by the plane x+2y-2z = 9 with the axes are :

(a) $\frac{9}{2}$, 9 ,$\frac{-9}{2}$ (b) -9 , $\frac{9}{2}, \frac{9}{2}$ (c) 9 ,$\frac{9}{2}, \frac{-9}{2}$ (d) None of these

Q.7 The point which lies in the plane given by the equation x-2y+3Z=5 IS:

(a) (0,0,0) (b) (1,1,1) (c) (1,0,1) (d) (1,11,1)

Q.8 If line $\frac{x-2}{6} = \frac{y-1}{p} = \frac{z+5}{-4}$ is perpendicular to the plane plane 3x-y-2z =7,then value of p is:

(a) 2 (b) -2 (c) 3 (d) -3

Q.9 The distance of the plane 2x-3y-6z+14=0 from point (3,0,1) is:

(a) 3 (b) 2 (c) -2 (d) 5

Q.10 The equation of the YZ-plane is:

(a) x = 0 (b) y = 0 (c) z = 0 (d) None of these

TRUE / FALSE :

1) The points (1,2,3),(-2,3,4)and (7,01) are collinear.

2) Cartesian equation of the line which is parallel to the vector $2\hat{\imath} - \hat{\jmath} + 3\hat{k}$ and which passes through the points (5,-2,4) is $\frac{x-5}{2} = \frac{y+2}{-1} = \frac{z-4}{3}$.

3) Planes 2x+y+3z-2=0 and 2x-y+3z-2=0 are parallel.

4)The lines $\frac{x-1}{3} = \frac{y-2}{2k} = \frac{z-3}{2}$ and $\frac{x-1}{3k} = \frac{y-1}{1} = \frac{z-6}{-5}$ are perpendicular to each other then value of k is $-\frac{10}{7}$.

5) The line $\vec{r}$ = $2\hat{\imath} - 3\hat{\jmath} - \hat{k} + \mu(\hat{\imath} - \hat{\jmath} + 2\hat{k})$ lies in the plane $\vec{r}.(3\hat{\imath}+\hat{\jmath} - \hat{k}) + 2 = 0$.

FILL UPS :

1)The Cartesian equation of the plane $\vec{r}.(3\hat{\imath} - 4\hat{k}) = 5$ is ----------

2) The vector equation of the line passes through the points (0,0,0) and (1,1,1) is ----------

3) Distance between the point (10,0,1) and the plane 3y+4z+1=0 is ----------

4) The point which lies in the plane given by the equation 7x -5y-3z =7 is ---------

5) The d.r's of the normal to the plane -2x+3y-7z=4 are ----------

ANSWERS

CHOOSE THE CORRECT ANSWER:

Q.1 (c) Q.2 (b) Q.3 (b) Q.4 (a) Q.5 (c) Q.6 (c) Q.7 (d) Q.8 (b)

Q.9 (b) Q.10 (a) TRUE / FALSE : 1) True 2) True 3) False 4) True 5) True

FILL UPS: 1) 3x-4z=5 2) $\vec{r} = t.(\hat{\imath} + \hat{\jmath} + \hat{k})$ 3) 1 unit 4) (7,0,0) 5) $\langle 2, -3, 7\rangle$

CHAPTER : PROBALITITY

CHOOSE THE CORRECT ANSWER :

1) If P(A) = $\frac{1}{5}$,P(B) = $\frac{3}{10}$ and P(A∩B) = $\frac{3}{25}$ then P(AUB) is

(a)$\frac{1}{25}$ (b) $\frac{19}{25}$ (c) $\frac{19}{50}$ (d) $\frac{16}{25}$

2) If A and B are independent events and if P(A) =$\frac{3}{5}$, P(B) =$\frac{1}{5}$, then P(A∩B) is equal to:

(a) $\frac{1}{3}$ (b) $\frac{25}{3}$ (c)$\frac{1}{5}$ (d) $\frac{3}{25}$

3) If P(E) = $\frac{1}{4}$ and P(E∩F) = $\frac{1}{52}$ what is P(F/E)

(a) $\frac{1}{13}$ (b) $\frac{14}{13}$ (c) $\frac{1}{8}$ (d)13

4) If two events A and B are independent then P(A∩B) is equal to

(a) P(A) +P(B) (b) P(A) - P(B)

(c) P(A).P(B) (d) P(A)/P(B)

5) If P(A) = 1/2 , P(B) = 0, then P(A|B) is –

(a) 0 (b) 1/2 (c) not defined (d) 1

6) A die is thrown once, then the probability of getting a number greater than 3 is

(a) $\frac{1}{2}$ (b) $\frac{2}{3}$ (c) 6 (d) 0

7) The probability of obtaining even prime number on each die when a pair of dice is rolled a

(a) 0 (b) $\frac{1}{3}$ (c) $\frac{1}{12}$ (d) $\frac{1}{36}$

8) If P(A) = 0.8, P(B) = 0.5 P(B/A) = 0.4, find P(A∩B)

(a) 0.32 (b) 0.13 (c) 0.032 (d) 0.20

9) If P(E) denotes probability of accurrence of event E, then

(a) P(E) ∈ [-1, 1] (b) P(E) ∈ (1, ∞)

(c) P(E) ∈ (o, 1) (d) P(E) ∈ [0, 1]

10) Two events A and B will be independent if,

(a) A and B are mutually exclusive (b) P(A`B`) = (1 – P(A)) (1 – P(B))

(c) P(A) = P(B) (d) P(A) + P(B) = 1

FILL UPS :

1) Let A and B be two events .If P(A/B) = P(A) ,then A is _____ of B .
2) If A and B are mutually exclusive events and if P(A) = $\frac{1}{2}$, P(A∪B) =$\frac{3}{5}$ then P(B)_____
3) Let A and B be two events if P(B/A) = P(B) then B is _____ of A.
4) If P(A)=1/2, then P(A^c) = _____.
5) If E_1 and E_2 are independent events , then P($E_1 \cap E_2$)=_____.

TRUE / FALSE

1) Two independent events are always mutually exclusive .
2) If A is an event then P(A) + P(not A) =1 .
3) If A and B are mutually exclusive events, then they will be independent also .
4) The probability of event can not be negative .
5) Probability of leap year is selected at random contains 53 Tuesday is $\frac{2}{7}$.

ANSWERS

CHOOSE THE CORRECT ANSWER:

1) c 2) d 3) a 4) c 5) c 6) a 7) d 8) a 9) d 10) b

FILL UPS: 1) independent 2) $\frac{1}{10}$ 3) independent 4) $\frac{1}{2}$ 5) $P(E_1).P(E_2)$

TRUE/FALSE: 1) False 2) True 3) False 4) True 5) True