CHAPTER # 1 NUMBER SYSTEM

1. √ 3 is a _____ number.

(a) Odd number (b) Complex number (c) Rational (d) irrational

2. The multiplicative inverse of complex number (0, 1) is

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

3. $(-i)^{19}$ = ...

(a) – i (b) i (c) 1 (d) -1

4. a > 0 ⇨

(a) –a > 0 (b) –a < 0 (c) 1/a >0 (d) 1/a <0

5. Modulus of complex number 3 – 4i is

(a) 4 (b) 5 (c) -5 (d) 0

Answers:

1 D
2 A
3 B
4 C
5 B

CHAPTER # 2 SETS FUNCTIONS AND GROUPS

1. The tabular form of {x|x ∈ Q $x|x \in Q \wedge x^2 = 3$} is

(a) {9} (b) {√3} (c) {√3, -√3} (d) { }

2. A ∩ B = ϕ , then n(A-B) is equal to

(a) n(A) (b) n(A ∩ B) (c) n(B) (d) n(A ∪ B)

3. The power set of the empty set is

(a) Empty set (b) non empty set (c) Power set (d) Improper set

4. A ∪ (A ∩ B)

(a) B (b) A ∩ B) (c) ϕ (d) A

5. The conjunction of two statements p and q is denoted by

(a) p ↔ q (b) p → q (c) p ← q (d) p ^ q

6. p ^ q is true if both are true. This is known as :

(a) Conjunction (b) negation (c) disjunction (d) none of these

7. Inverse of $p \rightarrow q$ is

(a) $\tilde{} p \rightarrow \tilde{} q$ (b) $p \rightarrow \tilde{} q$ (c) $p \leftarrow q$ (d) $\tilde{} q \rightarrow \tilde{} p$

8. The converse of contrapositive of $p \rightarrow q$ is

(a) $q \rightarrow p$ (b) $\tilde{} q \rightarrow \tilde{} p$ (c) $\tilde{} p \rightarrow \tilde{} q$ (d) $p \rightarrow q$

9. A function which is onto is called

(a) Objective (b) Injective (c) bijective (d) surjective

10. Number of identity elements in any group is

(a) 1 (b) 2 (c) 3 (d) None of these

11. The set N w.r.t addition is a

(a) Group (b) monoid (c) null set (d) semi group

Answers:
1 D
2 A
3 B
4 D
5 D
6 D
7 A
8 A
9 C
10 A
11 D

CHAPTER # 3 MATRICES AND DETERMINANTS

1. For non-trivial solution $|A|$ is ……

(a) $|A| > 0$ (b) $|A| < 0$ (c) $|A| = 0$ (d) None

2. Minimum number of equation for any system of equations

(a) 2 (b) 3 (c) 4 (d) 10

3. The square matrix A is skew-Hermitian when $(A)t$ =……

(a) A (b) - A (c) A (d) - A

4. The matrix B = $\begin{bmatrix} 1 & 4 \\ 4 & 8 \end{bmatrix}$ ---------

(a) Singular matrix (b) Non Singular matrix (c) Symmetric matrix (d) None of these

5. The matrix A =$[aij]_{2\times3}$ and B =$[bij]_{3\times2}$ are suitable for ……

(a) A + B (b) A – B (c) A B (d) None

Answers:

1 C
2 A
3 B
4 A
5 C

CHAPTER 4: QUADRATIC EQUATIONS

1) In the quadratic equation ax^2 + bx – c = 0 the sum of roots is

A) – b/c B) – b/a

C) – c/a D) a/c

2) The roots of quadratic equation ax^2 – bx – c = 0 are real if

A) b^2 + 4ac ≤ 0 B) b^2 – 4ac < 0

C) b^2 + 4ac ≥ 0 D) b^2 – 4ac = 0

3) If one root of quadratic equation is 4 + 5i, then equation

A) x^2 – 8x + 41 = 0 B) x^2 + 8x + 41 = 0

C) x^2 – 41x + 8 = 0 D) x^2 – 41x – 8 = 0

4) If 3^{1+x}+5.3^x – 8 = 0, then x =

A) 8 B) 5

C) 3 D) 0

5) The product of roots of 3x^2 + 5x – 2 = 0 is

A) 5/3 B) 3/5

C) –2/5 D) –2/3

6) If ω, ω^2 are complex cube roots of unity Then ω + ω^2 =

A) 1 B) –1

C) 0 D) none of these

7) The roots of quadratic equation x^2 – 4x = 0 are

A) Imaginary B) Rational & Different

C) Irrational D) Rational & Equal

8) If the area of a rectangle is 56 & the length is one more than the breadth then the dimensions are

A) –8, -7 B) 8, 7

C) 14, 4 D) 28, 2

9) If one root of $4x^2$ + 7hx – h^2 + 9 = 0 is zero then h =

A) 0 B) 3

C) –3 D) ± 3

10) The value of ω^{12} is

A) 1 B) ω

C) ω^2 D) 0

Answers:

1. B
2. D
3. A
4. D
5. D
6. B
7. B
8. B
9. D
10. A

CHAPTER 5: PARTIAL FRACTIONS

1. An open formed by using the sign of equality "=" is called _____
   a) Equation b) In – equation
   c) True sentence d) False sentence

2. 2x = 3 is a conditional equation it is true for _____
   a) 2 b) 3
   c) 2/3 d) 3/2

3. x^2 + x – 6 = 0 is a conditional equation and it is true for
   a) 2, 3 b) 2, - 3
   c) – 2, - 3 d) – 2, 3

4. The symbol _____ shall be used both for equation and identity
   a) ≅ b) =
   c) ≠ d) ≡

5. $\frac{P(x)}{Q(x)}$, Q(x) ≠ 0 is known as
   a) improper rational fraction b) rational fraction
   c) proper rational fraction d) none of the above

6. $\frac{9x^2}{x^{3-1}}$ is a fraction.
   a) rational fraction b) improper fraction
   c) rational fraction d) none of these

7. $\frac{x^2-3}{3x+1}$ is a fraction
   a) rational fraction b) proper fraction
   c) improper rational fraction d) none of these

8. There are _____ types of rational fraction .
   a) three b) four
   c) five d) two

9. The partial fraction of $\frac{1}{x^2-1}$ is
   a) $\frac{1}{2(x-1)} - \frac{1}{2(x+1)}$ b) $\frac{1}{2(x-1)}$
   c) $\frac{1}{2(x+1)}$ d) $\frac{1}{2(x-1)} + \frac{1}{2(x+1)}$

10. The partial fraction of $\frac{2x^2-3x+4}{(x-3)^3}$ is
   a) $\frac{2}{x-1}$ b) $\frac{1}{(x-1)^2}$
   c) $\frac{2}{x-1} + \frac{1}{(x-1)^2} + \frac{3}{(x-1)^3}$ d) $\frac{3}{(x-1)^3}$

Answers:

1. A
2. C
3. A
4. B
5. B
6. B
7. C
8. D
9. A
10. C

CHAPTER: 6 SEQUENCE AND SERIES

1. Which of the following is an A.P?

(a) 2, 4, 6, ……. (b) 1, 1/2, 1/3, ……. (c) 1, 5, 11, 18, …. (d) 1, 4, 9, ……..

2. The general term of the sequenced 2, 4, 6, 8, ….. is

(a) n (b) 2n (c) 2n – 1 (d) n^2

3. The 8th term of the sequenced 5, 9, 13, …….. is

(a) 36 (b) 30 (c) 33 (d) 27

4. Which term of the sequenced 3, 9, 15, …….. is 117

(a) 19 (b) 20 (c) 21 (d) 22

5. The sum of the series -1+1+3+…..+21 is_____

(a) 110 (b) 120 (c) 130 (d) 140

6. The A. M b/w a & b is …..

(a) (a + b) / 2 (b) 2ab / (a + b) (c) (a – b) / 2 (d) ± √ ab

7. The G.M b/w a & b is _____

(a) 2ab / a + b (b) (a + b) / 2 ___ (c) ± √ ab (d) None

8. G. M b/w 2 & 8 is_____

(a) 5 (b) ± 3.2 (c) - 4 (d) ± 4

9. A. M b/w 4 & 8 is…… ___

(a) √ 32 (b) - √ 32 (c) 6 (d) 64 / 16

10. If A, G & H are A.M, G.M & H.M b/w two numbers respectively then

(a) (a) A < G < H (b) A > G < H (c) A < G > H (d) A > G > H

11. A geometric series cannot contain ____ as a term.

(a) -1 (b) 1 (c) 0 (d) None

12. The sequence -1, 1, -1, 1…..is _____

(a) A.P (b) G.P (c) H.P (d) None

13. The arrangement of number formed according to some definite rule is called_____

(a) Sequence (b) Function (c) Series (d) None

Answers:

1. a
2. b
3. c
4. b
5. b
6. a
7. c
8. d
9. c
10. d
11. c
12. b
13. a

CHAPTER 7: PERMUTATIONS, COMBINATIONS AND PROBABILITY

1. For a positive integer n n! = _____

(a) n 2 (b) n (n-1) (n-2)……3.2.1 (c) n.n (n-1)…2.1 (d) n. 5. 2. 1

2. 0! = ……

(a) 1 (b) 0 (c) undefined (d) None

3. ${}^{n}P_{o}$ =…….

(a) 1 (b) 0 (c) 0 (d) n!

4. ${}^{n}P_{r}$ = …….

(a) n (n-1)……(n-r-1) (b) n(n-1) (n-2)….. (n-r+1) (c) n(n-1)……(n-r) (d) None

5. $^{20}P_3$ = _____

(a) 20x19x18 (b) 20x3 (c) 20!/3! (d) 3/20!

6. $^{n}P_{n-1}$ =_____

(a) (n-1)! (b) n (n-1) (c) n! (d) 1

7. If $^{n}P_2 = 30$ then n =

(a) 5 (b) 6 (c) 2 (d) 28

8. In how many different ways can eight books be arranged on a shelf?

(a) 8! (b) 8 (c) 56! (d) 56

9. The number of committees of seven person formed from a group of 10 persons will be

(a) 71 (b) 101 (c) 100 (d) 120

10. If A & B are mutually disjoint events then P (AUB) =

(a) P (A) + P (B) – P (P∩B) (b) P (A) – P (B) (c) P (A) + P (B) (d) None

Answers:

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

CHAPTER 8: MATHEMATICAL INDUCTION AND BINOMIAL THEOREM

1) If x is so small that its square and higher powers be neglected then $(1 + 3x)^{-2}$ =

A) 1 + 9x B) 1 – 9x

C) 1 + 6x D) 1 – 6x

2) For every positive integer n 1 + 5 + 9 + ... + (4n – 3) is equal to

A) n(2n – 1) B) (2n – 1)

D) n – 1 D) n

3) The number of terms in the expansion of (2x + y)6 are

A) 6 B) 7

C) 8 D) 14

4) The term involving x4 in the expansion of (3 – 2x)7 is

A) 120 B) 1512

C) 1250 D) 15120

5) $(a + x)^n = \sum_{r=0}^{n} \binom{n}{k} a^{n-r}$ where a and x are:

A) imaginary B) Rational

C) Irrational D) Real numbers

6) The expansion (1 + x) -3 holds when

A) |x| > 1 B) |x| < 1

C) |x| > 1 D) x < 1

7) 1 + 2 + 3 .....+ n =

A) $\frac{n^2(n+1)^2}{4}$ B) $\frac{n(n+1)}{2}$

C)$\frac{n(n+1)(2n+1)}{6}$ D) $\frac{n^2}{2}$

8) Number of terms in the expansion of (a + x)n is

A) n – 1 B) n + 1

C) n + 2 D) n + 3

9) The middle term of the expansion (1 + 2x)6 is .....

A) 1st term B) 4th term

C) 2nd term D) 3rd term

10) If n is add the expansion (a +x)n has …….. middle terms.

A) 2 B) 3

C) 4 D) 5

Answers:

1. D
2. A
3. A
4. D
5. D
6. B
7. B
8. A
9. B
10. A

CHAPTER 9: FUNDAMENTALS OF TRIGONOMETRY

1. What is the length of an arc of a circle of radius 5cm, whose central angle is of 140^o

a) 2.443 radians b) 1.443 radians

c) 0.443 radians d) 2 radians

e) None of these

2. If a circle is divided into 360 parts, then the angle subtended by each part at the center of the circle is called _____

a) 1 radian b) 1 degree

c) 1 angstrom d) 1 minute

e) None of these

3. The union of two non-collinear rays which have a common endpoint is called the …..

a) Angle b) Radian

c) Degree d) Minute

e) Second

4. The 60^{th} part of one degree is called one

a) centimeter b) radian

c) degree d) minute

e) none of these

5. $1\ ^{o}$= _____

a) 60′ b) 60′′

c) 3600′ d) 360′

e) None of these

6. The system of measurement in which the angle is measured in degrees, and its subunits, minutes and seconds is called

a) Circular system b) Sexagesimal system

c) MKS system d) CGS system

e) None of these

7. The length of the arc cut off on a circle of radius 6cm by a central angle of $2\pi/3$radians

a) 12.566cm b) 10.033cm

c) 12.113cm d) 9.156cm

e) 6.56cm

8. The radius of the circle when l = 3cm, θ= 3.4 radians.

a) 0.214 cm b) 9.419 cm

c) 3.146 cm d) 4.978 cm

e) None of these

9. $\text{Sin}\theta = \frac{\text{Perpendicular}}{?}$

a) base b) hypotenuse

c) cos θ d) tan θ

e) none of these

10. The pendulum of a clock is 40cm long and it swings through an angle of 30o each second. How far does the tip of the pendulum move in 1 seconds?

a) 10cm b) 15.71cm

c) 20.94cm d) 28.65cm

e) 40cm

Answers:

1. E
2. B
3. A
4. D
5. A
6. B
7. A
8. E
9. B
10. C

CHAPTER 10: TRIGNOMETRIC IDENTITIES

1. Sin (α-β) = ……

(a) Sin α cos β + cos α sin β (b) Sin α cos β – cos α sin β

(c) Cos α cos β – sin α sin β (d) cos α cos β + sin α sin β

2. Cos (α + β) = ……

(a) Sin α cos β + cos α sin β (b) Sin α cos β - cos α sin β

(c) cos α cos β - sin α sin β (d) cos α cos β + sin α sin β

3. Tan (-β) = …….

(a) tan β (b) - tan β (c) cot β (d) cos β

4. Cos (2700- θ) = ……

(a) - sin θ (b) sin θ (c) -cos θ (d) cos θ

5. Tan (2700 + θ) = …….

(a) tan θ (b) -tan θ (c) cot θ (d) -cot θ

6. Sin (1800 – θ) = ……

(a) cos θ (b) sin θ (c) -sin θ (d) - cos θ

7. Tan (450 – θ) =……
(a) 1 + tan θ (b) cos θ + sin θ (b) 1 - tan θ cos θ – sin θ
(c) 1 - tan θ (d) sin θ + cos θ (d) 1+ tan θ sin θ – cos θ

8. Cot 150 = ……
(a) √3 – 1 / √3 + 1 (b) 1 - √3 / 1 + √3 (c) 1 + √3 / 1 - √3 (d) √3 + 1 / √3 – 1

9. Cos (2000 40/) = …….

(a) -sin (200 40/) (b) sin (200 40/) (c) Cos (200 40/) (d) - Cos200 40/

10. sin α + Cos α = ……. Sec4α Cosec4α

(a) sec 5α (b) sin 5 α (c) Cosec 5 α (d) Cos 5α

11. Sin β = …….
(a) 2sin β cos β (b) Sin β /2 cos β / 2 (c) 2sin β / 2 cos β / 2 (d) None

12. Cos 2α = ……..

(a) 2cos2α + 1 (b) 2cos2 α – 1 (c) 1 + 2sin2 α (d) 2sin2 α-1

13. Cos2 150 – sin2 150 =……..
(a) Cos2 150 (b) Cos4 300 (c) ½ (d) √3 / 2

Answers:
1. a
2. c
3. b
4. a
5. d
6. b
7. c

8. d
9. d
10. b
11. c
12. b
13. d

CHAPTER 11: TRIGNOMETRIC FUNCTIONS AND THEIR GRAPHS

1. 'Sine' and 'cosine' are periodic function whose period is …….
(a) л / 2 (b) л (c) 2 л (d) 4 л

2. Tangent and cotangent are periodic function whose period is…….
(a) л/2 (b) л (c) 2 л (d) 4 л

3. The period of sec and cosec function is ……..
(a) л/2 (b) л/4 (c) 3л/4 (d) 2л

4. The domain of sine & cosine is …….
(a) - л/2 ≤ x ≤ л/2 (b) - л/2 < x < л/2 (c) 0 ≤ x ≤ л (d) None

5. The range of y = sin x & y = Cos x is ……..
(a) 0 ≤ y ≤ 1 (b) -1 ≤ y ≤ 0 (c) -1 ≤ y ≤ 1 (d) -1 < y < 1

6. Tan 180° = ……
(a) 0 (b) 1 (c) -1 (d) ∞

7. Sin (315°) =
(a) 1/√2 (b) - 1/√2 (c) √3/2 (d) - √3/2

8. In 1st Quadrant the value of sine is…….
(a) Increase from 0 to 1 (b) Increase from -1 to 0 (c) Decrease from 1 to 0 (d) Decrease from 0 to -1

9. In 3rd quadrant the value of cosines
(a) Increases (b) decreases (c) Constant (d) None

10. Cos (240°) =…

(a) √3 (b) -√3 (c) ½ (d) - ½

Answers:

1. c
2. a
3. d
4. d
5. c
6. a

7. b
8. a
9. a
10. b

CHAPTER12: APPLICATION OF TRIGONOMETRY

1. How many important elements a triangle has……..

A. 5 B. 6

C. -5 D. 4

E. None of these

2. Angle above the eye level

a) Angle of elevation b) Angle of depression

c) Constant angle d) Right angle

e) Obtuse angle

3.A tree of 8m high has the shadow 6m in length, the angle of elevation of the sum at that moment is

a) 0 b)$53^o7'$

c) 90^o d) 180°

e) 225°

4. At the top of a cliff 80m high, the angle of depression of a boat is 12o. the distance of the boat from the cliff is

a) 100m b) 255m

c) 377m d) 477m

e) 733m

5. The area of a triangle with a = 300, b=120, γ = 150o is

a) 5000 square units b) 6000 square units

c) 7000 square units d) 9000 square units

6. a circle drawn inside a triangle and touching its sides is called the

a) Circum circle b) In circle

c) Escribed circle d) Normal

e) None of these

7. The circle passing thought three vertices of a triangle is called a …….

a) Circum circle b) In circle

c) Escribed circle d) Tangent

e) None of these

8. = $r_1 r_2 r_3 =$

a) Rr^2 b) rR^2

c)Rs^2 d) rR^2

e)rs^2

9. $r_1 r_2 + r_2 r_3 + r_3 r_1 =$

a) r_1^2 b) Δ^2

c) R^2 d) r^2

e) s^2

10. if Δis the area of a triangle ABC, then Δ=

a) $\sqrt{s(s+a)(s-b)(s-c)}$ b) $\sqrt{s(s-a)(s+b)(s-c)}$

c) $\sqrt{s(s-a)(s-b)(s+c)}$ d) $\sqrt{s(s+a)(s+b)s+c)}$

e) $\sqrt{s(s-a)(s-b)s-c}$

Answers:

1. B
2. A
3. B
4. C
5. D
6. B
7. A
8. E
9. E
10. E

CHAPTER 13: INVERSE TRIGONOMETRIC FUNCTIONS

1. The inverse exists only for the function which is
(a) One to one (b) onto (c) into (d) All of these

2. To make a trigonometric function one to one, it's _____ is restricted.
(a) Domain (b) period (c) Range (d) None

3. The domain of $y = sin^{-1}$ is.
(a) (- π, π) (b) (-π / 2, π / 2) (c) (-1, 2) (d) None of these

4. Inverse sine function is written as…….. (
a) $(sinx)^{-1}$ (b) sin1 (c) arc$(sin)^{-1}x$ (d) arc $(sin)^{-1}$

5. The domain of y = $sinx^{-1}$x function is…
(a) (-1, 1) (b) (-∞, ∞) (c) (0, π) (d) (-π/2, π/2)

6. The range of y = sin^{-1} function is….
(a) (-1, 1) (b) (-∞, ∞) (c) (0, π) (d) (-π/2, π/2)

7. The inverse cosine function can also be written as
(a) $(Cosx)^{-1}$ (b) $Cosx^{-1}$ (c) arc Cos x (d) arc cos^{-1}x

8. The domain of = $(cos)^{-1}$x function is…
(a) (-1, 1) (b) (-∞, ∞) (c) (0, π) (d) (-π/2, π/2)

9. The range of y = $(cos)^{-1}x$ function is…
(a) (-1, 1) (b) (-∞, ∞) (c) (0, π) (d) (-π/2, π/2)

10. Inverse tangent function can be written also written as
(a) $(tanx)^{-1}$ (b) $tanx^{-1}$ (c) arc tan x (d) arc $(tan)^{-1}$ x

Answers:
1. a
2. a
3. b
4. c
5. a
6. d
7. c
8. a
9. c
10. c
11. d
12. a
13. b

14. a
15. b
16. c
17. b
18. b
19. b
20. a
21. b

CHAPTER 14: SOLUTIONS OF TRIGONOMETRIC EQUATIONS

1. If Sin x -= Cos x, then the general solution is

(a) n π, where n ε Z

(b) 2n π, where n ε Z

(c) π / 4 + 2n π, where n ε Z

(d) π / 4

2. Solution of the equation Sin x = $\sqrt{3}$ / 2, x ε(0, π) are

(a) π / 3, 2π / 3

(b) π / 6, π / 3

(c) π / 3, 5 π / 3

(d) None of these

3. Solution of the equation 1 + Cos x = 0 is

(a) π/2

(b) π

(c) 2 π

(d) None of these

4. The solution set of tan 2x = 1 in (0, π) is:

(a) { π /8, 5π/8}

(b) { π/4, 5π/4}

(c) { π/4, 3π/4}

(d) None of these

5. The solution set of sec x = - 2 in (0, π) is:

(a) 2 π /3, 4π3

(b) π/3, 2π/3

(c) π/3, 4π/3

(d) None of these

6. The solution set of sin x = 0 is :

(a) 2nπ, n ε Z

(b) n π, n ε Z

(c) 2nπ, n ε Q

(d) None of these

7. The solution of tan2 x = 3, which lie in (o, π) is

(a) 4 π /3, 5π/3 (b) π/3, 2π/3

(c) π/3, 4π/3 (d) None of these

8. If tan (x/2) = $\sqrt{3}$, and x lies in (0, 2π), then x is equal to

(a) 0 and x (b) π/3 and 5π/3

(c) π/6 and 5π/6 (d) None of these

9. General solution of the equation 1 + Cos x = 0 is

(a) { π/2 + 2nπ} (b) {- π/2 + 2nπ}

(c) { π + 2nπ} (d) None of these

10. Cos x = ½ has solution:

(a) π/2 (b) π/3

(c) π/4 (d) π/6

Answers:

1. C
2. A
3. B
4. A
5. A
6. B
7. D
8. B
9. C
10. D