A.P.R.E.I. SOCIETY (R) HYDERABAD

S.S.C. IMPORTANT QUESTIONS

MATHEMATICS

PAPER – 1

(SLOW LEARNERS MATERIAL FOR MATHEMATICS)

(Statements & Sets)

<u>One mark questions</u>

1. Show that $(A^1)^1 = A$.
2. If $A \subset B$ then show that $B^1 \subset A^1$.
3. If $A \cup B = \varphi$ then show that A = B and B = A.
4. If $n(A \cup B) = 51,\ n(A) = 20,\ n(B) = 44$ find, $n(A \cap B)$.
5. Simplify: (i) $\sim [PX(\upsilon q)]$ (ii) $\sim [P \wedge (Nq)]$ (iii) $\sim [(\sim P) \Rightarrow q]$ iv) $\sim [(\sim P) \Leftrightarrow q]$

<u>Two marks questions</u>

1. Prove the following

   i) $\sim (P \Rightarrow \upsilon) \equiv (P \wedge \sim q)$ ii) $P \Rightarrow q \cong (\sim P \Rightarrow \sim q)$

   iii) $q \Rightarrow P \cong (\square\ P \Rightarrow \sim q)$
2. Write the converse, inverse and control positive of the following:

   (i) If $\Delta ABC,\ AB = AC$ than $\angle B = \angle C$

   (ii) If in $\Delta ABC,\ AB > AC$ then $\angle C > \angle B$

   (iii) If a triangle is equilateral it is isosceles.

   (iv) If two triangles are congruent then they are similar.
3. Prove if x is even then x^2 is even.
4. Write the definition and true table of the following

   i) Conjunction ii) Disjunction iii) conditional iv) Biconditional
5. Show that $P \wedge (\sim q) \Rightarrow P$ in a tautology.
6. Show that $(P \wedge (\sim q) \wedge ((\sim P) \vee q)$ is a contradiction ?

7. Prove that $A \cap B = A - B^1 = B - A^1$
8. Prove that $A^1 - B^1 = B - A$.
9. Prove that $A \cap B^1 = A - B$
10. If in a class of 30 students 10 take tea but not coffee and 14 take tea. Then how many take coffee but not tea.

Four marks questions

1. Prove that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
2. Prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
3. Prove that $A - (B \cup C) = (A - B) \cap (A - C)$
4. Prove that $A - (B \cap C) = (A - B) \cup (A - C)$

Additional questions

One mark questions

1. If $A \subset B$ then prove that $A \cap B = A$
2. If $A \subset B$ then prove that $A \cup B = B$

Two marks questions

1. Draw the vern diagrame of $A \Delta B$

Four marks questions

1. Prove that $(A \cap B)^1 = A^1 \cup B^1$

Bits

1. $A \cup \varphi = A$
2. $A \cap \varphi = Q$
3. $A \cup \mu - u$
4. $A \cap \mu = A$
5. $C = \left\{1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}\right\}$ write in set guider form

2 - FUNCTIONS

One mark questions

1. If, f = {(1, 2) (2, 3) (3, 4) (4, 1)} then find fof ?
2. If, f = {(1, 3)(2, 5)(3, 7)}, g = {(3, 7)(5, 9)(7, 10)} then find gof.
3. Let f: R – {1} → R defined by $f(x)=\frac{x+1}{x-1}, \forall x \in R-\{1\}$ then show that $f(x)+f\left(\frac{1}{x}\right)=0$.
4. If f = {(1, 2)(2,3) (3,4)}, g = {(2, 5)(3, 6)(4, 7)}. Then find gof.
5. If f(n) = x + 2, g(x) = x^2 – 3 then find (i) fog (-2) (ii) gof(-2).

Two marks questions

1. If f: R – {3} → R we defined by $f(x)=\frac{x+3}{x-3}$ then show that $f\left(\frac{3x+3}{x-1}\right)=x$.
2. If, f: R – {2} → R be defined $f(x)=\frac{2x+1}{x-2}$ then show that $f\left(\frac{2x+1}{x-2}\right)=x$
3. If f(x) = x + 2, g(x) = x^2 – x – 2 then find $\frac{g(1)+g(2)+g(3)}{f(-4)+f(-2)+f(2)}$
4. If f(x) = x^2 + 2x + 3 then find the value of $f\frac{(x+h)-f(x)}{h}$.
5. If, f(x) = x^2 + 2x – 15 the find the value of $f\frac{(x+h)-f(x)}{h}$
6. If f: R → R be defined by f(x) = 3x + 2, show that f has an one-one.
7. If f: R → R be defined by f(x) – 2x + 3 then show that 'f' is an onto function.

Four marks questions

1. Let f, g, h be real functions defined as f(x) = x + 2, g(x) = 2x + 3, h(x) = 3x + 4 then show that (fog) oh = fo(goh).
2. Let f, g, h be real functions as f(x) = x, g(x) = 1 – x, h(x) = x + 1 then show that hogof = ho(gof).
3. Let f: R → R be defined by f(x) = x + 2 find $\{x : 2 \le x \le 5\}$ and find the inverse function. If they exist, find domain and range.

Additional Questions

One mark questions

1. Define the following functions (i) one-one (ii) constant (iii) Identity.

3. POLYNOMIALS

One mark questions

1. Find the sum and the product of the roots of the equation $\sqrt{3}x^2 + 9x + 9\sqrt{3} = 0$
2. Define the remainder theorem.
3. Define factor theorem.
4. Write the quadratic equation whose roots are $2+\sqrt{3},\ 2-\sqrt{3}$
5. The product of two consective numbers is 72. Find the numbers.
6. Find the number which is less then its square by 132.
7. Define the principle of mathematics induction (theorem).

Two marks questions

1. Find the value of m in order that $x^4 - 2x^3 + 3x^2 - mn + 5$ may be exactly divisible by $x - 3$.
2. Find the value of k so that $x^3 - 3x^2 + 4x + = kx$ exactly divisible by $x - 2$.
3. If a and b are unequal and $x^2 + ax + b$ and $x^2 + bx + a$ have a common factor, show that $a + b + 1 = 0$.
4. Solve the inequation $x^2 - 6x + 5 < 0$.
5. Solve $x^2 - 6x + 8 > 0$.

Four marks questions

1. Find a quadratic function on x such that when it is divided by (x – 1),(x – 2), (x – 3) leaves the remainder 1, 2, 4.
2. Resolve in factors $x^4 + 4x^3 + 3x^2 - 4x - 4$.
3. Find the middle term in the expression $\left(\frac{x}{4}+\frac{4}{x}\right)^8$.
4. Find constant term of the expression $\left(3x-\frac{5}{x^2}\right)^9$.
5. Find the coefficient of x^3 in the expression $(3x + 4)^6$.

Five marks questions

1. Using graph $y = x^2 - x - 12$ solve the equation $x^2 - x - 12 = 0$.
2. Using graph of $y = x^2$ solve the equation $x^2 + 2x - 15 = 0$.
3. Find the *l*, m values of $x^4 - x^3 + lx^2 + mn + 4$ such that exactly divisible by $x^2 - x - 2$.

Bits

1. Find the condition that $x^n - y^n$ may be divisible by $x + y$.
2. When $x^n - y^n$ divisible by $x - 4$.
3. Find the quadratic equation whose roots is $2+\sqrt{3}$.
4. $|n| \leq a \Rightarrow$.

Additional questions

1. Find the quadratic polynomial in 'x' which when divided by (x – 1), (x – 2), (x – 3) leaves remainder 11, 22 and 37 respectively.
2. Solve $x^2 - 5x - 14 > 0$.
3. Solve $x^2 - 10x + 21 < 0$.
4. Find the middle term of the expression $\left(3x+\frac{1}{2x}\right)^7$.
5. Resolve into factors $x^4 + 5x^3 + 4x^2 - 5x - 6$.
6. Using graph $y = x^2$ solve the equation $x^2 - x - 6 = 0$.
7. Using graph $y = x^2 - 5x + 6$ solve the equation $x^2 - 5x + 6 = 0$.
8. Using graph $y = x^2$ solve the equation $x^2 - 4x + 3 = 0$.
9. Using graph $y = x^2 + 5x + 6$ solve equation $x^2 + 5x + 6 = 0$.

4. LINEAR PROGRAMMING

One mark questions

1. What is an objective function.
2. What is the convex set.
3. What is an Isoprofit lines?
4. What is feasible region ?
5. What is feasible solution ?

6. What is convex polygon ?

Two marks questions

1. $x \geq 1,\ y \geq 1,\ x \leq 3,\ y \leq 3$ draw the graphs ? and solve.
2. Show the region of the inequation $4x + 3y \geq 12$.
3. Show region of the given inequation of $2x + 3y \leq 6$.
4. Solve the inequation by graphical method $x \geq 0,\ y \geq 0,\ x + g \leq 1$.

Four marks questions

1. A shop keeper not more than 30 shirts of each colour. Atleast twice as many while ones are sold as green ones. If the profit on each of the white be Rs.20 and that of green be Rs.25, how many of each kind be sold to give him a maximum in it.

Five marks questions

1. Maximise f = 2x + y subject to the $2x + y \leq 8,\ y \leq 4,\ x \leq 3, x \geq 0,\ y \geq 0$.

Additional questions

1. Two maximize f = 3x + 2y under the constraints $5x + 8y \leq 40,\ 5x + 4y30,\ x \geq 0,\ y \geq 0$.

4. Real numbers

One mark questions

1. If $(x^{2/3})^p = x^2$ then find p value.
2. If $a^x = 0.04$ then find a^3 ?
3. If $a^n = b$, $b^y = c$, $c^z = a$, then show that xyz = 1.
4. If $x = a^p,\ y = a^q,\ x^q y^p = a^{q/r}$ show that pqr = 1.
5. If $64^x = \frac{1}{256} y$ show that 3x + 4y = 0.
6. Solve $|2x - 3| = 7$.
7. Find $\lim_{x \to 4} \frac{\sqrt{x} + 12}{4}$
8. Find $\lim_{x \to -1} \left(4 - \frac{3}{x^2}\right)$
9. Find $\lim_{x \to 0} \frac{x^2 + 5x}{x}$

10. Find $\underset{x\to 1}{Lt}\dfrac{3x+4}{x}$

Two marks questions

1. If $a = x+\sqrt{x^2+1}$ show that $x = \dfrac{1}{2}(a-a^{-1})$

2. If $y = \sqrt[3]{3}+\dfrac{1}{\sqrt[3]{3}}$ show that $3y^3 - 9y = 10$.

3. If $a^{1/3}+b^{1/3}+c^{1/3}=0$ show that $(a + b + c)^3 = 27abc$.

4. Solve $\left|2-\dfrac{x}{3}\right| \geq 4$

5. Solve $\left|5-\dfrac{x}{3}\right| \leq 1$

6. Find $\underset{x\to\alpha}{Lt}\dfrac{2x+3}{3x+5}$

7. Find $\underset{x\to 0}{Lt}\dfrac{\sqrt{1+x+x^2}-1}{x-a}$

8. Find value of $\underset{x\to a}{Lt}\dfrac{\sqrt{x+a}-\sqrt{2a}}{x-a}$

9. Show that $\underset{x\to a}{Lt}\dfrac{x^m-a^m}{x^m-a^n} = \dfrac{m}{n}a^{m-n}$

10. Evaluate $\underset{x\to 0}{Lt}\dfrac{(1+x)^4-1}{(1+x)^3-1}$

Four marks questions

1. If lmn = 1 show that $\dfrac{1}{1+l+m^{-1}}+\dfrac{1}{1+m+n^{-1}}+\dfrac{1}{1+n+l^{-1}}=1$

2. If $a^x = b^y = c^z$, $\dfrac{b}{a}=\dfrac{c}{b}$ show that $\dfrac{y}{x}=\dfrac{2z}{x+z}$.

3. Find the value $\underset{x\to\alpha}{Lt}\dfrac{(3x-1)(2x+5)}{(x-3)(3x+7)}$

Additional questions

1. Find the value of $\underset{x\to 1}{Lt}\dfrac{x-1}{\sqrt{x+3}-2}$

2. Show that $\underset{x\to a}{Lt}\dfrac{x^n-a^n}{x-a}=na^{n-1}$

3. Find the value of $\underset{x\to 0}{Lt}\dfrac{\sqrt{1+x}-1}{x}$

4. If $a^x=b^y=c^z=d^w,\ ab=cd$ then show that $\dfrac{1}{x}+\dfrac{1}{y}=\dfrac{1}{w}+\dfrac{1}{z}$

5. Solve $|21 - 7x| = 21$.

6. Solve $|3x - 5| = 10$

7. Solve $|4x + 1| \le 7$

8. Solve $\left|7-\dfrac{x}{2}\right|=10$

9. Solve $\left|\dfrac{2x-3}{5}\right|\le 3$.

5. *Progressions*

<u>One mark questions</u>

1. Find the 'k' value of k + 2, 4k – 6 and 3k – 2 are terms in A.P.

2. Find the 'x' value if $\dfrac{-2}{7},x,\dfrac{-7}{2}$ are in G.P.

3. $\dfrac{-3}{4},\dfrac{3}{16},\dfrac{-3}{64}$. Find the sum of infinity of G.P.

4. The first term of a G.P is 2 and the sum of the infinity is 6. Find the common ratio.

5. If a, b, c are three consecutive terms of an A.P. Then prove that k^a, k^b, k^c are three consecutive terms of a G.P where k is positive.

6. If A is the Arithmetic mean of a, b, G is Geometric mean and H is harmonic mean, then show that A, G, H are in G.P.

7. Find the 12^{th} term of the series $x,\dfrac{4x}{3},\dfrac{5x}{3},2x.....$

8. Which term in the A.P. 5, 2, -1 …… is -22.

9. The sum of first three terms of an A.P is 36. Find the first term.

10. Write the merit 2 term of the series $\dfrac{4}{3},\dfrac{3}{2},\dfrac{12}{7}$

Two marks questions

1. If 7 terms of the term of an A.P is equal to 11 times of 11^{th} term show that the 18^{th} term of it is zero.
2. Find the sum of 100 terms of A.P. 2, 4, 6, 8., …… and sum of n terms.
3. 8^{th} term of A.P is 192 and its common ratio is 2 then find 12^{th} term.
4. Insert 5 arithmetic means between 4 and 22.
5. Insert 3 Geometric means between 4, 64.
6. First term of G.P is 50 and 4^{th} term of G.P is 1350. Find 5^{th} term ?
7. If g_1, g_2 are three Geometric means between m, n then show $mn = g_1g_3 = g_2^2$.
8. The product of two numbers is 91 and then arithmetic mean is 10, find the two numbers.
9. 4^{th} term of H.P is $\frac{1}{9}$ and 11^{th} terms $\frac{1}{23}$. Then write the H.P.
10. If the ratio of G.P is $-\frac{4}{5}$ and sum of infinite series is 8019. Find first term.

Four marks questions

1. Find the sum to interms of 0.5 + 0.55 + 0.555 + …… n terms.
2. Find the sum of n terms of 7, 77, 777 + ……. n terms.
3. If (b + c), (c + a), (a + b) are in H.P. Show that $\frac{1}{a^2}, \frac{1}{b^2}, \frac{1}{c^2}$ wall also be in H.P.
4. The A.M., G.M., H.M numbers are A.G.H. respectively. Show that $A \geq G \geq H$.
5. If the sum of first 'n' natural numbers is S_1 and that of then squares S_2 and cubes S_3. Show that $9S^2 = S_3(1 + 8S_1)$.

Additional questions

1. Insert 4 H.m's is between $\frac{1}{12}, \frac{1}{42}$.
2. Insert 4 A.m's between 3, 33.
3. Which term of A.P. 10, 8, 6,……. Is -28.
4. Insert 5 G.m's in between $\frac{1}{3}$, 243.
5. Evaluate $\sum_{k=1}^{11}(2+3^k)$.
6. Find the sum of term of 6 + 66 + 666 + ……..
7. Find the sum of n terms of 0.7 + 0.77 + 0.777 + ……

6. Slow Learners material for mathematics Bit book for Mathematics Paper - I

Statements & Sets

1. Symbol of Universal quantities …….
2. Example for existentias quantities ……..
3. $\sim(P \wedge q) \cong$ ……..
4. $PV(q \wedge r) \cong (PVq) \wedge (PVr)$ is called……. Law.
5. If 3 + 2 = 5 then 1 x 0 the truth value ……..
6. The statement which uses the connective and is called a …….
7. The statement of the term 'if …… then ' is called ……
8. Contra partive of $\sim P \Rightarrow \sim q$ ……..
9. Symble for existential quantities ……..
10. Inverse of $\sim P \Rightarrow \sim q$ _____.
11. The negative statement of all primes numbers are base numbers = _____.
12. $\sim(P \Rightarrow q) =$ _____.
13. The example of tautology _____.
14. $P \Rightarrow q \cong$ _____.
15. "4 + 3 = 7 or 5 x 4 = 9" the truth value _____.
16. $\sim[P \wedge (\sim q)] =$ _____.
17. $\sim(\sim P) \cong$ _____.
18. $\sim(P \Rightarrow q) \cong$ _____.
19. $PV(\sim P) \cong t$ is _____ law.
20. (either P) or (not P) using symbols _____.
21. Determine when currentlows form A to B in the following circuit net work
22. If truth value of $P \Rightarrow q$ is F then = _____.
23. Negative statements of 4 x 2 = 7 _____.
24. Truth value of "$6x7 = 42 \Rightarrow 6 \div 2 = 4$" _____.
25. If $A \subset B$ then A – B = _____.
26. $A^1 - B^1 =$ _____.
27. If $A \subset B$, n(A) = 5, n(B) = 6 then $n(A \cup B) =$ _____.
28. If $A \subset B$ then $A \cap B =$ _____.
29. $A \cup A^1 =$ _____.
30. If n(A) = 20, n(B) = 44, $n(A \cap B) = 13$ then $n(A \cup B) =$ _____.

31. If $P \subset \mu,\ Q \subset \mu$ then $(P \cap Q)^1$ = _____.

32. μ^1 = _____.

33. If n(A) = 5, n(B) = 3 and $n(A \cap B) = 0$ then $n(A \cup B)$ = _____.

34. If A, B are disjoint sets and n(A) = 4, $n(A \cup B)$ = _____.

35. If $n(A) = 7,\ n(B) = 5$ then find maximum number elements in $A \cap B$.

36. If $A \cap B = \varphi$ then A, B are called _____.

37. If ACB, n(A) = 12, n(B) = 20 then n(B – A) = _____.

38. $(A \cup B \cup C)^1$ = _____.

39. If A, B are disjoint sets then $n(A \cup B)$ =

40. If $A \subset B$ and $B \subset A$ Then = _____.

41. If ACB then $A \cup B$ = _____.

42. $A - B^1$ = _____.

43. If A, B, C are three sets then $A - (B \cup C)$ = _____.

44. If n(A) = 4, n(B) = 3, $n(A \cap B) = 2$ then $n(A \cup B)$ = _____.

45. If $A = \{x \mid x \le 4,\ x \in N\},\ B = \{2,3,6,8\}$ then $A \cap B$ = _____.

46. $(A \cap B) \cup (A \cap C)$ = _____.

47. If A = {1, 3, 4, 7}, B = {1, 7, 8, 9}, C = {0, 1, 2, 3, 7} then $A \cap (B \cup C)$ = _____.

48. Proper of $A^1 \cup A = A^1$ is called _____.

49. If n(A) = 6, n(B) = 8, $n(A \cup B) = 12$ then $n(A \cap B)$ = _____.

FUNCTIONS

1. If f(x) = 2x + 3 then the zero functions _____.

2. If f(x) = x + 1 then 3f(2) – 2f(3) = _____.

3. If f: A → B be a onto function _____.

4. If $f(x) = x^3$, g(x) = 3 then fog(x) = _____.

5. If $f(x) = x^2 - x + 6$ then f(4) = _____.

6. Zero of function of $f(x) = x^2 + 4x - 12$ = _____.

7. If $f(x) = x^3$, $g(x) = x^2 - 2$ then gof(x) _____.

8. If a function is one-one and onto then it is a = _____.

9. If f: A → B : g : B → C then gof = _____.

10. If f(x) = x, ($g(x) = x^2$ then fog(2) _____.
11. If f = {(1, 2)(2,2)(3,2)} then range of f is _____.
12. If A = {1, 2}, B = {3, 4} then A x B = _____.
13. Range of function {(1, 2)(2,3)(3,4)} = _____.
14. If f is a identity function then f(5) = _____.
15. If f is identity function then f^1 = _____.
16. If f = {(1, 2) (2, 3) (3, 4) (4, 1)} then fof = _____.
17. If $f(x) = x^2 - 3x + 2$ then f(-2) = _____.
18. Range of function f(x) = 3 = _____.
19. If f = {(4, 6)(5, 7)(6, 8)(7, 9)} then $f^{-1}(8)$ = _____.
20. If f^1 (x) = x + 4 then f(7) = _____.
21. If f(x) = 2 – x, g(x) = 3x + 2 then fog(2) = _____.
22. If f: N bedefined by $f(x) = \frac{12}{x-3}, x \neq 3$ domain = _____.
23. If f: A → B function condition f^{-1}: B → A to be a function.
24. If f(x) = x, g(x) = x + 1, $h(x) = x^2$ then [ho(gof)] n = _____.
25. If y = f(x) = 5x then $f^{-1}(x)$ = _____.
26. If $f(x) = \frac{x(x-1)}{2}$ then f(x + 2) = _____.
27. If $f : N \to N, f(x) = x+1$ then range of f = _____.
28. Range of constant function.
29. If f: A → A f(x) = x $\forall x \in A$ the f is a = _____ function.
30. Co domain of function f: A → B = _____.
31. $f = \{(x,3) / x \in N\}$ is a _____ function.
32. If $f^1(y) = y - 3$ then f(x) = _____.
33. If f = {(1, 2)(2,3)(3, 4)}, g = {(2, 5)(3, 6))4, 7)} then gof = _____.
34. If (x + y, 1) = (3, y – x) then x = _____.
35. Two functions f and go defined on the same domain D, are to said be equal if _____.
36. If $f(x) = \frac{1-x}{x+1}, x \neq 1$ then _____.
37. If $f(x) = x^2 + x + 4$ then pre image of 24.
38. If f: R → R, f(x) = 3x + 2 then $f^{-1}(x)$ = _____.
39. Find the zero fo function from the graph .
40. Which is not a function is given graph

Additional questions

1. If $f(x)=\frac{x+1}{x-1}$, $x \neq 1$ find fofof(B).
2. If $f(x) = 2^x$ then $f^{-1}(x)$ = _____.
3. If n(A) = 3 and n(B) = 4 number of one-one functions _____.
4. If f(x) = x + 2 then $fof^{-1}(2)$.
5. If $f(x) = (2008 - x^3)^{1/3}$, $g(x) = (2008 - x^3)^{1/3}$ then fog(x).
6. If $f(x + 1) = (x - 1)^2$ then f(x – 1) = _____.
7. If $f(x + 1) = x^2 + 2x$ then $f(x^2)$.
8. If function f: A → B, ACB then 'f' is called _____ function.
9. If f(x) = 1, x > 2
   = 2, -3 < x < 2
   = 3, x < -3 then f(1) = _____.
10. Find range 'f' if f: A → B is function and domain $D=\left\{0,\frac{\pi}{3},\frac{\pi}{4},\frac{\pi}{2}\right\}$ and f(x) = 8x.
11. Find the zero of function on of given graph.

12. If n(A) = 3, n(B) = 4 then number of constant function from A to B.
13. If n(A) = 3, n(B) =2 then number of function from A to B
14. If n(A) = 4, n(B) = 2 then number of function A to B.
15. If n(A) = m, n(B) = n then number relation from A to B.
16. If n(A) > 4, n(B) = 3 then number of one-one function from A to B.
17. If n(A) = 3, n(B) = 4 then number of function from A to B.

POLYNOMIALS

1. If f(x) is divided by (x – a) then the remainder is _____.
2. Sum of coefficients expansion of $\left(\frac{x}{4}+\frac{y}{4}\right)^4$.
3. Another name for pascal triangle.
4. If $x^2 - 3x + 2 < 0$ then x value lies between _____.
5. ${}^4C_2$ = _____.
6. $|x| \geq a \Rightarrow$
7. Inequation from $1 < x < 3$ is _____.
8. The curve $x = my^2$, $m > 0$ lies in the quadrates.
9. The 5^{th} term in the expansion $(3x + 4)^6$ >?
10. Sum of coefficient of a polynomial is zero _____ is factors.
11. Last term expansion of $(3x + 4)^6$.
12. If $x^2 - 4x + 3 < 0$ then x value lies between _____.
13. If ${}^nC_{12} = {}^nC_1$ then n = _____.
14. Descriminat of $x^2 + 4x - 2 = 0$ _____.
15. The remainder when $(x^2 - 2x^2 + 4x - 5)$ divided from (x – 1) = _____.
16. Solution of $x^2 - 6x + 5 < 0$.
17. The value of k when (2, k) lies on $y = 2x^2 - 3$ parabola = _____.
18. If (x + 1) is factor of $ax^2 + bx + c$ then b = _____.
19. If (x + 1) is factor of $ax^2 + bx + c$ then b = _____.
20. If f(x) is divided by (x + a) then the remainder = _____.
21. Product of root of $x^2 - 2x = 15$.
22. The graph $y = x^2$ represents = _____.
23. The curve $y = 2x^2$ lies in the quadrants.
24. The quadratic equation of $\left(\sqrt{3}+1\right)\left(\sqrt{3}-1\right)$ = _____.
25. Last term in the expansion $\left(x+\frac{1}{x}\right)^7$
26. Terms is expansion of $\left(\frac{x}{y}+\frac{y}{x}\right)^8$.
27. If f(1) = 0 is factors for f(x) then.
28. If roots of $2x^2 + kx + 2 = 0$ equal then k value = _____.
29. Sum of the roots of $2x^2 - 9x + 8 = 0$ _____.

30. The tan contains x^5 is expansion of $\left(x-\frac{1}{x}\right)^9$ = _____.

31. ${}^6C_2 + {}^6C_4$ = _____.

32. Coefficient of x^2 is the expansion $(1 + n)^{10}$.

33. $X^n + y^n$ divisible by (x + y) when 'n' is _____.

34. First term in the expansion $\left(\frac{5}{\sqrt{x}}+6\sqrt{x}\right)^{20}$.

35. The discriminate of a quadratic equation negative then the roots are.

36. Discriminate of $ax^2 + bx + c = 0$.

APPRENTIS

LINEAR PROGRAMMING (BITS)

1. x > 0, y < 0 then (x, y) lies in _____ quadrant (Q4)
2. The solution set of constaints of an L.P.P. is convex set is called _____ (feasible region)
3. $x \geq y,\ y \geq x \Rightarrow$ (x = y)
4. Point satisfies the region x + y < 3 (1, 1)
5. Any point (x, y) in the feasible region is called _____ (feasible point)
6. x < 0, y < 0 then (x, y) lies _____ quadrant (Q3)
7. The parallel lines determined by the objective function is called _____ (is profitable lines)
8. The line y = mx + c passes through the origin then c = (0)
9. The Iso profitable line coincide with the edge of the polygon then the solutions are _____. (Infinite)
10. The value of he objective function f = 3x + y at (2, 4) = _____. (10)
11. The line x = 0 determine _____ axis (y)
12. The Iso profitable line moving away to the origion the profit will _____ (increase)
13. PEX, QEX, $\overline{PQCX}$ then X is called _____ (convex set)
14. The point (-3, 0) lies _____ axis (X-axis)
15. f == ax + by, a, b $\in$ R, is called _____ (objective function)
16. $x \geq 0, y \geq 0,\ 2x + 3y \leq 6$ solution set lies _____ quadrant (Q1)
17. $p = \frac{x}{3} + \frac{y}{2}$, which point (2, 0), (2, 3), (3, 2), (6, 0), (2, 3) maxdimum P ?

REAL NUMBERS

1. If $x^{1/2} = 0.2$ then $x^{3/2}$ = _____. (0. 008)
2. |2x – 7| = 0 then x = (7/2)
3. $\underset{x \to 0}{Lt} \frac{x^2 + 3x}{x}$ = _____. (3)
4. $x^{x^2} = x^4$ then x = _____. (2)
5. $a^{1/3} + b^{1/3} + c^{1/3} = 0$ then a + b + c = _____. $3(abc)^{1/3}$.
6. $|x| \geq a \Rightarrow$ _____. $(x \leq -a,\ or\ x \geq a)$
7. $16^{0.5}$ = _____. (4)

8. $64^x = 2\sqrt{2}$ then x = _____. (1/4)

9. The secant of a circle is called _____ (tangent)

10. $\lim_{x\to\infty} \frac{1}{x} =$ _____. (0)

11. $\sqrt[3]{16} \; x \; \sqrt[3]{4} =$ _____. (4)

12. $\lim_{x\to 2} \frac{x^2+8}{x+2} =$ _____. (3)

13. The positive value of |2x – 3| = 7 is _____ (5)

14. If $3^{5x+2} = 27^4$ then n = _____ (2)

15. $\lim_{x\to 3} \frac{x-27}{x-3} =$ _____. (27)

16. $()256)^{0.16}$ x $(256)^{0.09}$ = _____. (4)

17. If $2^{x+3} = 4^{x-5}$ then x = _____. (13)

18. If $5x - \sqrt{5} = 15 - \sqrt{5}$ then x^2 = (9)

19. If x = -3 then $|x^2 - 10|$ = _____. (1)

20. If |x| = - 4 then the value of x (does not exist)

21. If $x^{x\sqrt{x}} = \left(x\sqrt{x}\right)^x$ then x = $\left(\frac{9}{4}\right)$

22. If x = -8 then |x – 1| = (9)

23. $\lim_{x\to 0} \frac{(1+x)^{1/x} - 1}{x} =$ _____ $\left(\frac{1}{x}\right)$

PROGRESSIONS

1. The Gm of 5 and 125 _____. (25)

2. 1, 4, 9, 16…… progression the sum of x terms _____ $\frac{(n+1)(2x+1)}{6}$

3. If $\sum n = 5$ then $\sum n^3$ = _____ (25)

4. In A.P, the nth term is 2x + 5 then 1st term is (7)

5. The A.M of $\frac{1}{a}$ and $\frac{1}{b}$ _____. $\frac{a+b}{2ab}$

6. The relation among A.G.H _____. (G^2 = AH or $A \geq G \geq H$)

7. a, b, c are in G.P then ac = _____.

8. 7th term of the progression $1 - \frac{1}{2} + \frac{1}{4}$ _____ is (1/64)

9. The 15th term of AP x + y, x – y, x – 3y _____ is (x – 2y)

10. En G.P a = 2, $S_\alpha = 6$ Then r = _____ (2/3)

11. The H.M of 10 and 15 is _____ (12)

12. If $\sum n = 55$ then n = _____ (10)

13. 8^{th} term of A.P 1 + 3 + 5 + …… is (15)

14. In A.P the sum of three terms is 39. Then the middle term is ____ (13)

15. There are n Am's between a and b then the common difference d = $\frac{b-a}{n+1}$

16. Sum of cubes of first m, natural numbers _____ $\frac{n^2(n+1)^2}{4}$

17. The Am and Hm of two numbers are 2 and 8 find Gm (4)

18. If tanA, tanB, tanC are in A.P. then cotA, cotB and cotC are in ____ (H.P)

19. The A.m of a + 2, a, a – 2 (a)

20. If a, b, c are in A.P then a + c = _____ 2b

21. In G.P the nth term is $2(0.5)^{n-1}$ then the common ratio is _____ (0.5)

22. The nth term of 1.2 + 2.3 +…… (n(n+1))

23. Third root of 0.008 is _____ (0.2)

24. $\frac{a+b+2\sqrt{ab}}{\sqrt{a}+\sqrt{b}}$ = _____ $\sqrt{a}+\sqrt{b}$

25. $\left(a^{\frac{1}{3}}+b^{\frac{1}{3}}\right)\left(a^{\frac{2}{3}}-(ab)^{\frac{1}{3}}+b^{\frac{2}{3}}\right)$ = _____ (a+b)

26. $16^{1.25}$ = _____. (32)

27. $\sqrt{2^x} = 8$ then x = _____. (6)

28. $\sqrt{\sqrt{3^x}} = 81$ then x = _____ (16)

29. The limit of $1+\frac{1}{3}+\frac{1}{3^2}+\frac{1}{3^3}$ _____ (3/2)

30. The value of $\frac{3x2^{n+1}+2^n}{2^{n+2}-2^{n-1}}$ is (2)

31. $(-1)^n + (-1)^{4n} = 0$ then n is _____ number (odd)

32. $\underset{x\to\infty}{Lt}\frac{3x^2+4x+5}{2x^2+3x+4}$ = _____ (5/4)

33. The limit of the interior polygon of the circle is _____ (circumference)

34. $\underset{x\to a}{Lt}\frac{x^m-a^m}{x^n-a^n}$ = _____ $\frac{m}{n}a^{m-n}$