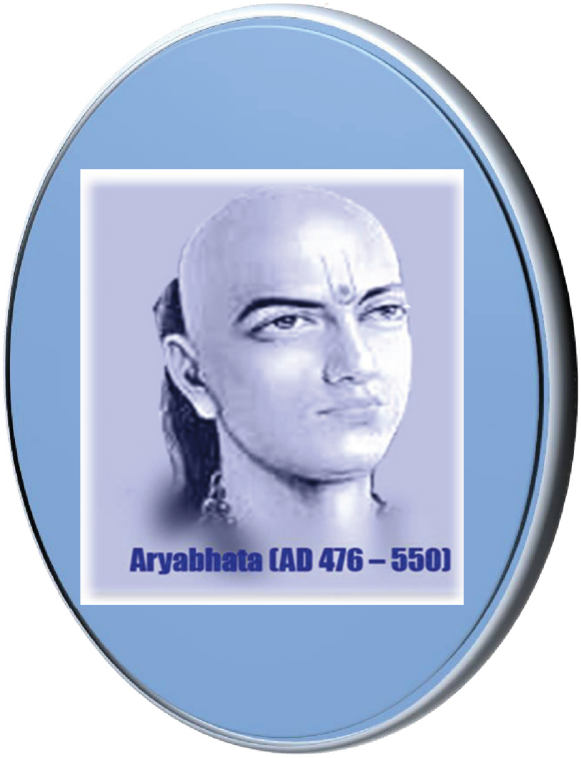
S.S.C.EXAMINATIONS , MARCH-2016

GRADE GAINER FOR
X MATHS (E.M.)



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ముందుమాట

10 వ తరగతి లో 10/10 గ్రేడు సాధించుటకు ప్రశ్నాపత్రమును విశ్లేషించుకుని చక్కని ప్రణాళికతో కృషి చేస్తే విజయము పొందవచ్చును.ఇందుకొరకు క్రింది విశ్లేషణను పరిశీలించండి.

*గణితము పేపరు-1*మార్చి 2015*

వ.సం	విషయము	2మా	1మా	4మా	5మా	1/2మా	మొత్తము	
1	వాస్తవ సంఖ్యలు	1x2=2	1x1=1	1x4=4	-	$7x1/2=3\frac{1}{2}$	$10\frac{1}{2}$	*****
2	సమితులు	1x2=2	1x1=1	1x4=4	-	2x1/2=1	8	
3	బహుపదులు	1x2=2	1x1=1	1x4=4	1x5=5	$5x1/2=2\frac{1}{2}$	$14\frac{1}{2}$	*****
4	వర్గ సమీకరణాలు	1x2=2	1x1=1	1x4=4	-	$3x1/2=1\frac{1}{2}$	$8\frac{1}{2}$	
5	రేఖీయ సమీకరణాలు	1x2=2	1x1=1	2x4=8	1x5=5	2x1/2=1	17	*****
6	శ్రేఢులు	1x2=2	1x1=1	1x4=4	-	$3x1/2=1\frac{1}{2}$	$8\frac{1}{2}$	
7	నిరూపక రేఖాగణితము	2x2=4	-	1x4=4	-	8x1/2=4	12	*****
	మొత్తము	8x2=16	6x1=6	8x4=32	2x5=10	$30x\frac{1}{2}=15$	79	

*గణితము పేపరు-2*మార్చి 2015*

వ.సం	విషయము	2మా	1మా	4మా	5మా	1/2మా	మొత్తము	
1	సరూప త్రిభుజాలు	1x2=2	-	1x4=4	1x5=5	6x1/2=3	14	*****
2	స్పర్శరేఖలు-చేధనరేఖలు	1x2=2	1x1=1	1x4=4	-	2x1/2=1	8	
3	క్షేత్రమితి	2x2=4	1x1=1	2x4=8		6x1/2=3	16	*****
4	త్రికోణమితి	1x2=2	1x1=1	1x4=4	-	$7x1/2=3\frac{1}{2}$	$10\frac{1}{2}$	
5	త్రికోణమితి-అనువర్తనాలు	1x2=2	-	1x4=4	1x5=5	$1x1/2=\frac{1}{2}$	$11\frac{1}{2}$	*****
6	సాంఖ్యకశాస్త్రము	1x2=2	2x1=2	1x4=4	-	4x1/2=2	10	
7	సంభావ్యత	1x2=2	1x1=1	1x4=4	-	4x1/2=2	12	*****
	మొత్తము	8x2=16	6x1=6	8x4=32	2x5=10	$30x\frac{1}{2}=15$	79	

పై విశ్లేషణను జాగ్రత్త గా పరిశీలిస్తే పేపర్-1 నందు కనీసము రెండు అధ్యాయాలు మరియు పేపర్-2 నందు కనీసము రెండు అధ్యాయాల పై పట్టు సాధిస్తే ప్రతి విద్యార్థి తప్పని సరిగ్గా పాసవుతారు. అంతేగాక తెలివైన విద్యార్థులు పై విశ్లేషణ ఆధారముగా ప్రతి అధ్యాయము నందు విషయావగాహనతో ఈ మెటిరీయల్ ను ప్రాక్టీసు చేస్తే 10/10 గ్రేడు సాధించవచ్చు.

1.REAL NUMBERS

❖ 1 mark questions

1. State Euclid's division algorithm?
2. Use Euclid's division algorithm to find the HCF of 96 and 72?
3. State the fundamental theorem of arithmetic?
4. State the laws of logarithms?
5. Is the sum or difference of a rational and an irrational is irrational?
6. Is the product or quotient of a rational and an irrational is irrational?
7. The sum of two irrational numbers need not be irrational. Give an example?
8. Express 140 as a product of its prime factors?
9. Find the HCF and LCM of 12,18 by prime factorization method?
10. Expand $\log 15$?
11. Expand $\log \frac{p^2q^3}{r}$?
12. Expand $\log x^2y^3z^4$?
13. Expand $\log \frac{343}{125}$?
14. Simplify $\log 10 + 2\log 3 - \log 2$?
15. Find the value of $\log_2 512$?

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❖ 2marks questions

1. Use Euclid's division algorithm to find the HCF of 900 and 270?
2. Use Euclid's division algorithm to find HCF of 870 and 225.?
3. Find the HCF of 1656 and 4025 by Euclid's method.?
4. State whether the following are terminating decimal expansion or a non-terminating repeating decimal with out actual division ?
   i) $\frac{29}{343}$ ii) $\frac{23}{2^3 5^2}$ iii) $\frac{6}{15}$ iv) $\frac{35}{50}$
5. Write the following are terminating decimal expansion or a non-terminating repeating decimal with out actual division ?
   i) $\frac{35}{50}$ ii) $\frac{21}{25}$ iii) $\frac{7}{8}$
6. Prove that the difference and quotient of $(3+2\sqrt{3})$ and $(3-2\sqrt{3})$ are irrational?
7. Show that $5-\sqrt{3}$ is irrational.?
8. Find the LCM and HCF of 17, 23 and 29 by the prime factorization method.
9. Find the HCF and LCM of 12, 36 and 160, using the prime factorization method ?

10. Explain why 7x11x13 + 13 is composite number?
11. Find the LCM and HCF of 192 and 8 and verify that LCM × HCF = product of the two numbers. ?
12. Prove that $7\sqrt{5}$ is irrational.?
13. Prove that $3\sqrt{2}$ is irrational.?
14. Show that $3+2\sqrt{5}$ is irrational.?
15. Solve $2^{x+1} = 3^{1-x}$?
16. Find x if $2\log 5 + \frac{1}{2}\log 9 - \log 3 = \log x$?

……..

❖4marks questions

1. Show that any positive odd integer is of form $4m + 1$ or $4m + 3$, where m is some integer.
2. Show that any positive odd integer is of the form $6m + 1$, or $6m + 3$, or $6m + 5$, where m is some integer.?
3. Prove that $\sqrt{3}$ is irrational.?
4. Prove that $\sqrt{2}$ is irrational.?
5. Prove that $\sqrt{5}$ is irrational.?
6. Prove that $\sqrt{2} + \sqrt{3}$ is irrational.?
7. Prove that $\sqrt{p} + \sqrt{q}$ is irrational, where p, q are primes?
8. Write $2\log 3 + 3\log 5 - 5\log 2$ as a single logarithm?
9. Show that any number of the form 4^n, n∈N can never end with the digit 0.?
10. Show that any number of the form 12^n, n∈N can never end with the digit 0.?
11. Show that any number of the form 6^n, n∈N can never end with the digit 0.?
12. If $x^2 + y^2 = 25xy$ then prove that $2\log(x+y) = 3\log 3 + \log x + \log y$?
13. If $(2.3)^x = (0.23)^y = 1000$ then find the value of $\frac{1}{x} - \frac{1}{y}$?
14. If $\log\frac{x+y}{3} = \frac{1}{2}(\log x + \log y)$ then find $\frac{x}{y} + \frac{y}{x}$?
15. If $x^2 + y^2 = 6xy$ then prove that $2\log(x+y) = 3\log 2 + \log x + \log y$?

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PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. Numbers which can be written in the form of $\frac{p}{q}$ $(q \neq 0)$ where p and q are integers.( )

   A) integers B) rational C) irrational D) natural

2. Numbers which cannot be written in the form of $\frac{p}{q}$ $(q \neq 0)$ where p and q are integers.( )

   A) integers B) rational C) irrational D) natural

3. Which of the following is true? ( )

   A) N⊂W⊂Z⊂R B) W⊂Z⊂N⊂R C) R⊂Z⊂W⊂N D)Z⊂W⊂R⊂N

4. HCF (12,15,21) = ( )

   A) 2 B) 3 C) 1 D) 5

5. LCM (12,18) = ( )

   A) 12 B)18 C) 6 D) 36

6. $\frac{16}{125}$ is …….. decimal. ( )

   A) terminating B) non-terminating , recurring

   C) non-terminating , non-recurring D)none

7. $\frac{100}{81}$ is …….. decimal. ( )

   A) terminating B) non-terminating , recurring

   C) non-terminating , non-recurring D)none

8. Let p be a prime. If p divides a^2,(where a is a positive integer) then p divides ( )

   A) a B)a^2 C)2a D)$\sqrt{a}$

9. Which of the following is a rational ( )

   A)5-$\sqrt{3}$ B) $3\sqrt{2}$ C) $\sqrt{2}+\sqrt{3}$ D)5+$\sqrt{4}$

10. $\log_2 512$ = ( )

    A) 8 B) 7 C) 9 D) 10

II. Fill in the blanks **10x1/2=5m**

11. .$\log_7 1$ = ……

12. 7x11x13+13 is a ……number.

13. $\log_2 2$ = ……

14. Logarithmic form of $\sqrt{49} = 7$ is . ……

15. The exponential form of $\log_a \sqrt{x} = b$ is …….

16. 3.131131113...is a ……..number.

17. Let $x = \frac{p}{q}$ $(q \neq 0)$ to be a rational number, such that the prime factorization of 'q' is of the form……., where *m, n* are non-negative integers. Then *x* has a decimal expansion which is terminating.

18. HCF is always……. LCM.

19. 7x11x13x15 +15 is a……number.

20. HCF of two numbers is 113, their LCM is 56952. It one number is 904. The other number is……..

III. Match the following **10x1/2=5m**

Group-A		**Group-B**
21. $\log 2 + \log 5 =$	( )	A.3
22. $\log 16 - \log 2 =$	( )	B.-2
23. $\log_{25} 5 =$	( )	C.log8
24. $\log_{10} 0.01 =$	( )	D.log10
25. $2^{\log_2 3}$	( )	E.1/2

Group-A		**Group-B**
26. A rational number between 3 and 4 is	( )	A.3/8
27. A irrational number between 3 and 4 is	( )	B.7/2
28. The $\frac{p}{q}$ form of 0.375 is	( )	C.$\sqrt{12}$
29. HCF(50,70)	( )	D.36
30. LCM(12,18)	( )	E.10

#2012 is National Mathematics Year#

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2.SETS

➢ 1 MARK QUESTIONS

1. Define a set?
2. What are finite and infinite sets?
3. Give an example for null set?
4. Is an empty set is finite? Why?
5. Define subset?
6. Define equal sets?
7. Define a cardinal number of a set?
8. Draw a Venn diagram for AUB?
9. Draw a Venn diagram for A∩B?
10. Draw a Venn diagram for A-B?
11. The intersection of any two disjoint sets is a null set. Why?
12. Give an example for disjoint sets?
13. Say the set builder form of AUB, A∩B, A-B?
14. Write the set builder form of {5,25,125,625}?
15. Write the set builder form of {1,4,9,16,25,……100}?
16. Write the roster form of {x;x is a prime which is a divisor of 60}?
17. Write the roster form of {x:x is a letter of the word "RAMANUJAN"}?
18. Let A = {2,5,6,8} , B = {5,7,9,1} , Find AUB ?
19. Let A = {5,6,7,8} , B = {7,8,9,10} , Find A∩B ?
20. If A = {2,3,5} then find AU∅ ?

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➢ 2 MARKS QUESTIONS

1. Show that the sets A and B are equal sets , where

   A ={ x:x is a letter of the word "ASSASSINATION"}

   B ={ x:x is a letter of the word "STATION"}?
2. List all sub sets of A = {x,y,z} ?
3. List all sub sets of A = {1,4,9,16} ?
4. Illustrate AUB in Venn diagram where A ={1,2,3,4} and B={2,4,6,8}?
5. Illustrate A∩B in Venn diagram where A ={1,2,3} and B={3,4,5,}?
6. If A = {0,2,4} , find A∩ ∅ and A∩A. Comment?

7. If A= {2,4,6,8,10} B= {3,6,9,12,15}, find A-B and B-A ?
8. If A={x: x is a natural number}, B ={x: x is An even natural number},

   C = ={x: x is An odd natural number}, D = {x: x is a prime number},

   Find AUB, A∩B, AUC, A∩C, AUD, A∩D?
9. If A = {1,2,3,4,5}, B = {4,5,6,7} find A-B and B-A ?
10. If n(A) = 10, n(B) = 7, n(A∩B)= 5 then find n(AUB)?

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➢ **4 MARKS QUESTIONS**

1. Let A= {2,4,6,8,10} B={3,6,9,12,15} then find (A∪B)- (A∩B) ?
2. If A={x: x is a natural number}, B ={x: x is An even natural number},

   C = ={x: x is An odd natural number}, D= ={x: x is a prime number},

   Find AUB, A∩B, AUC, A∩C, AUD, A∩D?
3. If A = {3, 6, 9, 12, 15, 18, 21}; B = {4, 8, 12, 16, 20} C = {2, 4, 6, 8, 10, 12, 14, 16}; D = {5, 10, 15, 20} then find (i) A – B (ii) A – C (iii) A – D (iv) B – A (v) C – A (vi) D – A (vii) B – C (viii) B – D (ix) C – B (x) D – B?

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PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. Which of the following collection is a set? ( )

   A.All good students in your class B.all boys in your class

   C.Ten most talented writers D.a team of 11 best cricket batsmen.

2. The elements of G = all the factors of 20. ( )

   A.{1,2,4,5,10,20} B.{1,2,3,4,5,8,10,20} C.{10,20,30,40} D.{0,20}

3. The elements of S={ x:x is a letter in the word "RAMANUJAN"} ( )

   A.{R,A,M,U,J,N} B.{ R,A,M,A,N,U,J,A,N} C.{R,M,N,J} D.{R,A,M,N,J}

4. A is the set of factors 12.Which one of the following is not a member of A ( )

   A.1 B.4 C.5 D.12

5. Which of the following is not a empty set? ( )

   A.Set of all natural numbers < 1 B. Set of even prime numbers

   C.Set of odd numbers that have remainder zero, when divided by 2

   D.Set of integers which lies between 2 and 3.

6. Which of the following set is infinite? ( )

   A. Set of all natural numbers < 10 B. Set of prime numbers < 10

   C. Set of all integers < 10 D. Set of all factors of 10.

7. Which of the following are true ? ( )

   A.{ } = $\emptyset$ B. $\emptyset = 0$ C. $0 = \{0\}$ D. $\emptyset = \mu$

8. A = { Quadrilaterals} B = {Square, rectangle,trapezium, rhombus}. Which of the following are true ? ( )

   A. $A \subset B$ B. $B \subset A$ C. A = B D.none

9. P is a set of factors of 5, Q is a set of factors of 25, R is a set of factors of 125. Which of the following are false ? ( )

   A.$P \subset Q$ B.$Q \subset R$ C.$R \subset P$ D.$P \subset R$

10. Which of the following are false given that A = {1,2,3,4}. ( )

    A.$2 \in A$ B.$2 \notin \{1,2,3,4\}$ C.$A \subset \{1,2,3,4\}$ D.$\{2,3,4\} \subset \{1,2,3,4\}$

II. Fill in the blanks **10x1/2=5m**

11. If A = {1,2,3,4} B = {2,4,6,8} then $A \cup B$ = …….

12. Let A = {1,3,7,8} B= {2,4,7,9} then $A \cap B$ = ……..

13. Let A = {1,2,3,4,5} B= {4,5,6,7} then $A - B$ =…….

14. If A= {6,9,11} then A∪ ∅ = ……..

15. n(A) = 5,n(B) = 5,n(A∩B) = 2 then n(A∪B) = ……

16. Empty set is denoted by……..

17. n(∅) =……

18. The universal set is denoted by …….

19. …… is a subset of every set.

20. Let A = {a,b,c,d}. The number of subsets does the set A have……..

III. Match the following **10x1/2=5m**

Group-A		**Group-B**
21. If A⊂ B and B ⊂ A then	( )	A. A
22. If A⊂ B and B ⊂ C then	( )	B. B
23. A and B are disjoint sets then A∩B =	( )	C. ∅
24. If A⊂ B then A∪B =	( )	D. A=B
25. If A⊂ B then A∩B =	( )	E. A⊂C

Group-A		**Group-B**
26. {P,R,I,N,C,A,L}	( )	A.{x:x is a divisor of 18}
27. {0}	( )	B.{x:x∈ Z,x^2-9=0}
28. {1,2,3,6,9,18}	( )	C.{x: x∈ Z, x+1=1}
29. {3,-3}	( )	D.{x: x is a letter of word "PRINCIPAL"}
30. { }	( )	E.{x: x∈N, x ≠ x}

Mathematics is the queen of all subjects

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3.POLYNOMIALS

➢ 1 MARK QUESTIONS

1. Give an example for linear polynomial?
2. Give an example for quadratic polynomial?
3. Give an example for cubic polynomial?
4. Write the general form of a first degree polynomial in one variable x?
5. Define zeroes of polynomial?
6. If $p(x) = 5x^7 - 6x^5 + 7x - 6$ then coefficient of x^5?
7. If $p(x) = 5x^7 - 6x^5 + 7x - 6$ then degree of p(x)?
8. Write the polynomial that has 2 zeroes ?
9. Write the polynomial that has 1 zero ?
10. How will you verify if polynomial has only one zero?
11. Find the number of zeroes of (i) 2x+1 (ii) $x^2 - 1$ (iii) x^3?
12. Find the sum of the zeroes of $ax^2 + bx + c$?
13. Find the product of the zeroes of $ax^2 + bx + c$?
14. Write the division algorithm?
15. The sum of the zeroes of $ax^3 + bx^2 + cx + d$?
16. The product of the zeroes of $ax^3 + bx^2 + cx + d$?

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➢ 2 MARKS QUESTIONS

1. If $p(x) = x^2 - 5x - 6$ the value of find p(0), p(1), p(2),p(3)?
2. If $p(m) = m^2 - 3m + 1$ find the value of p(1) and p(-1)?
3. Check whether -3 and 3 are the zeroes of the polynomial $x^2 - 9$?
4. Check whether -2 and 3 are the zeroes of the polynomial $p(x) = x^2 - x - 6$?
5. Find the zeroes of the polynomial $p(x) = x^2 + 5x + 6$?
6. Find the zeroes of the polynomial p(x) = (x+2)(x-3)?
7. Find the zeroes of the polynomial $p(x) = x^4 - 16$?
8. Why are $\frac{1}{4}$ and -1 zeroes of the polynomial $p(x) = 4x^2 + 3x - 1$?
9. Find the zeroes of the polynomial $p(x) = x^2 + 7x + 10$ and verify the relation ship between the zeroes and coefficients?

10. Find the zeroes of the polynomial $p(x) = x^2 - 3$ and verify the relation ship between the zeroes and coefficients?
11. Find a quadratic polynomial , the sum and product of whose zeroes are -3 and 2 respectively?
12. Find a quadratic polynomial if the zeroes of it are 2 and -1/3 respectively?
13. Divide $2x^2 + 3x + 1$ by $x + 2$?
14. Divide $3x^3 + x^2 + 2x + 5$ by $1+ 2x + x^2$?
15. Divide $3x^2 – x^3 – 3x + 5$ by $x – 1 – x^2$, and verify the division algorithm?

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➢ 4 MARKS QUESTIONS

1. Draw the graph of $y = 2x+5$, find the zero of $y = 2x+5$?
2. Draw the graph of $y = x^2 - x - 6$, find the zero of $y = x^2 - x - 6$?
3. Draw the graph of $y = x^2 - x - 12$, find the zero of $y = x^2 - x - 12$?
4. Draw the graph of $y = x^2 - 3x - 4$, find the zero of $y = x^2 - 3x – 4$?
5. Draw the graph of $y = x^3 - 4x$, find the zero of $y = x^3 - 4x$?
6. Draw the graph of $y = x^3 - x^2$, find the zero of $y = x^3 - x^2$?
7. Verify that 3, -1 , -3 are the zeroes of the polynomial $x^3 + 3x^2 - x – 3$ and then verify the relationship between the zeroes and coefficients?
8. Verify that 1, -1 , -1/3 are the zeroes of the polynomial $3x^3 - 5x^2 - 11x – 3$ and then verify the relationship between the zeroes and coefficients?
9. Find all zeroes of $2x^4 – 3x^3 – 3x^2 + 6x - 2$,if you know that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$
10. Find all zeroes of $3x^4 + 6x^3 – 2x^2 – 10x - 5$,if you know that two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$

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PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. A real no. k is a zero of the polynomial $f(x)$ if ( )

   (A) $f(k) > 0$ (B) $f(k) = 0$ (C) $f(k) < 0$ (D) none

2. The zeroes of a polynomial $f(x)$ are the coordinates of the points where the graph of $y = f(x)$ intersects ( )

   (A) x-axis (B) y-axis (C) origin (D) (x, y)

3. If k is zero of $f(x)$ then ____ is one of the factors of $f(x)$ ( )

   (A) $(x - k)$ (B) $(x - 2k)$ (C) $(x + k)$ (D) $(2x - k)$

4. If $(y - a)$ is factor of $f(y)$ then ___ is a zero of $f(y)$ ( )

   (A) y (B) a (C)$2a$ (D) $2y$

5. Which of the following is not correct for : A quadratic polynomial may have

   (A) no real zeroes (B) two equal real zeroes ( )

   (C) two distinct zeroes (D) three real zeroes.

6. Cubic polynomial $x = f(y)$ cuts y-axis at almost ( )

   (A) one point (B) two points (C) three points (D) four points

7. Polynomial $x^2 + 1$ has ___ zeroes ( )

   (A) only one real (B) no real

   (C) only two real (D) one real and the other non-real.

8. If α, β are the zeros of the polynomials $f(x) = x^2 + x + 1$ then $\frac{1}{\alpha} + \frac{1}{\beta} =$ ( )

   (A) 1 (B) –1 (C) 0 (D) none

9. If one of the zero of the polynomial $g(x) = (k^2 + 4)\,x^2 + 13x + 4k$ is reciprocal of the other then $k =$ ___ ( )

   (A) 2 (B) – 2 (C) 1 (D) – 1

10. Which of the following is polynomial? ( )

(A) $x^2 - 6\sqrt{x} + 2$ (B)$\sqrt{x} + \frac{1}{\sqrt{x}}$ (C)$\frac{5}{x^2+3x+1}$ (D) none of these

II. Fill in the blanks **10x1/2=5m**

11. If zeroes of the polynomial $ax^2 + bx + c$ are reciprocal of each other then……

12. The zeroes of the polynomial $h(x) = (x - 5)\,(x^2 - x - 6)$ are……

13. Graph of $y = ax^2 + bx + c$ intersects x-axis at 2 distinct points if ……

14. If 2 is a zero of both the polynomial, $3x^2 + ax - 14$ and $2x - b$ then $a - 2b$ = ……..

15.Polynomial $2x^4 + 3x^3 - 5x^2 + 9x + 1$is a……..

16.A polynomial of degree 2 is called …….

17. A polynomial of degree 3 is called …….

18.The general form of linear polynomial is …….

19. The general form of quadratic polynomial is …….

20. The general form of cubic polynomial is …….

III. Match the following **10x1/2=5m**

Group-A		**Group-B**
21.The zeroes of the polynomial $x^2 - 9$ are	( )	A. 1
22.Let $p(x) = x^2 - 4x + 3$ then $p(1)$ =	( )	B. 3
23.The number of zeroes of $x^2 - 1$ is	( )	C. ± 3
24. The number of zeroes of x^3 is	( )	D. 2
25. The number of zeroes of $2x + 1$ is	( )	E. 0

Group-A		**Group-B**	
26.The sum of the zeroes of $p(x) = x^2 - 4x + 3$ is	( )	A.	3
27. The product of the zeroes of $p(x) = x^2 - 4x + 3$ is	( )	B.	4
28. The sum of the zeroes of $p(x) = x^3 + 3x^2 - x - 2$ is	( )	C.	x^2-x-2
29. The product of the zeroes of $p(x) = = x^3 + 3x^2 - x - 2$ is	( )	D.	-3
30.A quadratic polynomial whose zeroes are 2,-1 is	( )	E.	1

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Give me a place to stand and I will move the earth - Archimedes

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4.PAIR OF LINEAR EQUATIONS

➢ 1 MARK QUESTIONS

1. Write the general form of linear equation in two variables and write conditions?
2. Solve 2(x+3) = 18?
3. Find x which satisfies the equation 2x-(4-x) = 5-x?
4. Check whether the pair of linear equations 2x+y-5 = 0 and 3x-2y-4 = 0 interesting, parallel, or coincident lines?
5. Check whether the pair of linear equations 3x+4y = 2 and 6x+8y = 5 interesting, parallel, or coincident lines?
6. Check whether the pair of linear equations 2x-3y = 5 and 4x-6y =15 are consistent?

➢ 2 MARKS QUESTIONS

7. For what value of p , the equations 2x+py = -5 and 3x+3y = -6 have a unique solution?
8. Find the value of k , the equations 2x-ky+3=0 and 4x+6y-5=0 represent parallel lines?
9. For what value of k , the equations 3x+4y+2=0 and 9x+12y+k=0 represent coincident lines?
10. 5pencils and 7pens together cost Rs.50,where as 7pencils and 5pens together cost Rs.46. write pair of linear equations to find the cost of 1 pencil and that 1 pen?
11. The larger of two supplementary angles exceeds the smaller by 18°. Find the angles.?
12. Two angles are complementary. The larger angle is 3° less than twice the measure of the smaller angle. Find the measure of each angle.
13. Solve 3x+2y=11 and 2x+3y=4 by elimination method ?
14. Solve 2x-y=5 and 3x+2y= 11 by substitution method ?

➢ 4 MARKS QUESTIONS

1. In a garden there are some bees and flowers. If one bee sit on each flower , one bee will be left. If two bees sit on each flower, one flower will be left. Find the number of bees and flowers ?
2. The perimeter of rectangular plot is 32m.If the length is increased by 2m and the breadth is decreased by 1m , the area of plot remains same. Find the length and breadth of plot ?
3. Tabita went to a bank to withdraw Rs.2000. she asked the cashier to give the cash in Rs.50 and Rs.100 notes only. She got 25 notes in all. How many notes each of Rs.50 and Rs.100 she received.?

4. Mary told her daughter , "seven years ago , I was seven times as old as you were then. Also , three years from now, I shall be three times as old as you will be." Find the present age of Mary and her daughter.?
5. A fraction becomes 4/5, if 1 is added to both numerator and denominator. If, however, 5 is subtracted from both numerator and denominator, the fraction becomes 1/2. What is the fraction?
6. A man travels 370 km partly by train and partly by car. If he covers 250 km by train and the rest by car, it takes him 4 hours. But if he travels 130 km by train and the rest by car, it takes 18 minutes more. Find the speed of the train and that of the car.?
7. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours it can go 40 km upstream and 55 km downstream. Determine the speed of the stream and that of the boat in still water.?
8. 2women and 5 men can together finish an embroidery work in 4 days while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone and 1 man alone to finish the work.
9. Solve $\frac{2}{x} + \frac{3}{y} = 13$ and $\frac{5}{x} - \frac{4}{y} = -2$?
10. Solve $\frac{5}{x+y} - \frac{2}{x-y} = -1$ and $\frac{15}{x+y} - \frac{7}{x-y} = 10$?
11. Solve $\frac{5}{x-1} + \frac{1}{y-2} = 2$ and $\frac{6}{x-1} - \frac{3}{y-2} = 1$?
12. Solve $\frac{x+y}{xy} = 2$ and $\frac{x-y}{xy} = 6$?
13. Solve 6x+3y=6xy and 2x+4y=5xy

➢ **5 MARKS QUESTIONS**

14. Solve 2x+3y = 1 and 3x-y = 7 graphically?
15. Solve 3x+2y = 5 and 2x-2y = 7 graphically?
16. Solve 2x-3y = 8 and 4x-6y = 9 graphically?

PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. Which of the following is not a linear equation? ( )

   A. 5+4x = y+3 B.x+2y=y-x C.3-x=y^2+4 D.x+y=0

2. Which of the following is a linear equation in one variable? ( )

   A.2x+1=y-3 B.2t-1=2t+5 C.2x-1=x^2 D.x^2-x+1=0

3. A solution for 2(x+3) = 18 is ( )

   A.5 B.6 C.13 D.21

4. The value of x satisfies 2x- (4-x)=5-x is ( )

   A.4.5 B.3 C.2.25 D.0.5

5. The equation x-4y-5 has ……..solutions. ( )

   A.no B.unique C.two D.infinitely many

6. If a pair of equations is consistent, then the lines will be ( )

   A.parallel B.coincident C.intersecting D.B or C

7. If a pair of equations is inconsistent, then the lines will be ( )

   A.parallel B.coincident C.intersecting D.B or C

8. When the lines l_1 and l_2 are coincident , then the graphical solution of pair of linear equation have ……. Solutions. ( )

   A.no B.unique C.two D.infinitely many

9. When the lines l_1 and l_2 are parallel, then the graphical solution of pair of linear equation have ……. Solutions. ( )

   A.no B.unique C.two D.infinitely many

10. If $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ then the pair of linear equation is ( )

    A.Consistent B. inconsistent C.dependent D.A and C

II. Fill in the blanks **10x1/2=5m**

11. If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ then the pair of linear equation is ……

12. If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ then the pair of linear equation is ……..

13. The pair of linear equations 5x-5y = 8 and 3x-9y = 24/5 has ……solutions

14. The pair of linear equations x+2y+5=0 and -3x-6y+1=0 has ……solutions

15. The solution of x+y=14 and x-y = 4 is……..

16. The value of k for the equations x-2y=3 and 3x+ky=1 has unique solution is ……..

17. The value of k for the equations 2x+3y=5 and 4x+ky=10 has infinitely many solution is ……

18. The value of k for the equations x+2y=3 and 5x+ky+7=0 has no solution is …….

19. If 2x+3y=0 and 4x-3y=0 then x+y=……..

20. The pair of linear equations 2x+3y=5 and 5x+15y/2 = k represent two coincident lines then the value of k is……

III. Match the following 10x1/2=5m

Group-A		Group-B
21. $2x + y - 5 = 0$ and $3x - 2y - 4 = 0$ are	( )	A. parallel lines
22. $3x + 4y = 2$ and $6x + 8y = 4$ are	( )	B.4x+6y+8=0
23. 4x-6y - 15 = 0 and 2x-3y - 5 = 0 are	( )	C.6x+9y-24=0
24. The parallel line to $2x + 3y - 8 = 0$ is	( )	D. intersecting lines
25. The coincident line to $2x + 3y - 8 = 0$ is	( )	E. coincident lines

Group-A		Group-B	
26. The value of 'p' the pair of equations $2x + py = - 5$ and $3x + 3y = - 6$ has a unique solution	( )	A.	2
27. The value of 'k' for which the pair of equations $2x - ky + 3 = 0$, $4x + 6y - 5 = 0$ represent parallel lines.	( )	B.	$\neq 2$
28. The value of 'k', the pair of equation $3x + 4y + 2 = 0$ and $9x + 12y + k = 0$ represent coincident lines.	( )	C.	3
29. The value of x in the equation 5x-8=2x-2 is	( )	D.	6
30. The pair of linear equations 3x+5y = 3, 6x+ky= 8 do not have solutions if k=	( )	E.	-3

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5.QUADRATIC EQUATIONS

➢ 1 MARK QUESTIONS

1. Raju and Rajendar together have 45 marbles. Both of them lost 5 marbles each and the product of the number of marbles now they have is 124. Represent the situation in the form of quadratic equation to find out how many marbles they have previously?
2. The hypotenuse of a right triangle is 25cm. we know that the difference in the lengths of the other two sides is 5cm. Represent the situation in the form of quadratic equation to find out the lengths of two sides?
3. Check whether $x(2x+3) = x^2+1$ is a quadratic equation or not ?
4. Check whether $x(x+1)+8 = (x+2)(x-2)$ is a quadratic equation or not ?
5. The product of two consecutive positive integers is 306. Represent the situation in the form of quadratic equation to find the integers?
6. Verify that 1 and 3/2 are roots of $2x^2-5x+3=0$?
7. Find the roots of $2x^2-5x+3=0$ by factorization method ?
8. Find the discriminant of $2x^2-4x+3=0$ and hence find the nature of the roots ?
9. Find the nature of the roots of $3x^2-4\sqrt{3}x+4=0$?
10. Find the value of k for $2x^2-kx+3=0$,sothat it has two equal roots ?

➢ 2 MARKS QUESTIONS

11. Find the roots of the quadratic equation $x - \frac{1}{3x} = \frac{1}{6}$?
12. Find two numbers whose sum is 27 and product is 182 ?
13. Find two consecutive positive integers , sum of whose square is 613 ?
14. Find the roots of $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$?
15. Find the roots of $5x^2 - 6x - 2 = 0$ by the method of completing the square ?
16. Find two consecutive odd positive integers , sum of whose square is 290 ?
17. Find the roots of $2x^2 - 2\sqrt{2}x + 1 = 0$. If they exist, using quadratic formula ?
18. Find the roots of $x + \frac{1}{x} = 3$, $x \neq 0$?
19. Find the roots of $\frac{1}{x} - \frac{1}{x-2} = 3$, $x \neq 0,2$?
20. Find the discriminant of $3x^2 - 2x + 1/3 = 0$ and find the nature of its roots. Find them, if they are real.?

➢ 4 MARKS QUESTIONS

21. Find the dimensions of the rectangle whose perimeter is 28m, and whose area is $40m^2$?
22. The base of a triangle is 4cm longer than its altitude. If the area of triangle is $48cm^2$, then find its base and altitude ?
23. A motor boat whose speed is 18km/h in still water. It takes 1 hour more to go 24km upstream than to return downstream to the same spot. Find the speed of the stream?
24. The altitude of a right triangle is 7m less than its base. If the hypotenuse is 13cm. find the other two sides ?
25. A motor boat heads upstream a distance of 24km on a river whose current is running at 3 km per hour. The trip up and back takes 6 hours. Assuming that the motor boat maintained a constant speed, what was its speed?
26. Is it possible to design a rectangular mango grove whose length is twice its breadth, and the area is 800 m^2? If so, find its length and breadth.?

PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. Which of the following is a quadratic equation? ( )

   A.x^2-6x-4=0 B.x^3-6x^2+2x-1=0 C.$x^2+\frac{1}{x^2}=2$ D.x(x+1)=(x-2)(x+2)

2. The general form of a quadratic equation? ( )

   A.ax^2+bx+c=0 B. ax+by+c=0 C. ax^2+by^2+c=0 D. $ax^2+by^2+c^2=0$

3. The discriminant of ax^2+bx+c=0 ( )

   A.b^2-4ac B.$\sqrt{b^2-4ac}$ C. b^2+4ac D. $\sqrt{b^2+4ac}$

4. The roots of a quadratic equation ax^2+bx+c=0 is ( )

   A.$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ B. $\frac{b\pm\sqrt{b^2-4ac}}{2a}$ C. $\frac{-b\pm\sqrt{b^2+4ac}}{2a}$ D. $\frac{b\pm\sqrt{b^2+4ac}}{2a}$

5. If b^2-4ac<0, then the equation ax^2+bx+c=0 have ( )

   A.two equal real roots B.two distinct real roots

   C.no real root D.one root

6. X^2+4x+5 = 0 have ( )

   A.two equal real roots B.two distinct real roots

   C.no real root D.one root

7. A quadratic equation ax^2+bx+c=0 has two distinct real roots, if ( )

   A.b^2-4ac>0 B.b^2-4ac<0 C. b^2-4ac=0 D.none

8. A quadratic equation ax^2+bx+c=0 has two equal real roots, if ( )

   A.b^2-4ac>0 B.b^2-4ac<0 C. b^2-4ac=0 D. none

9. A quadratic equation ax^2+bx+c=0 has no real roots, if ( )

   A.b^2-4ac>0 B.b^2-4ac<0 C. b^2-4ac=0 D.none

10. The graph of the quadratic equation ax^2+bx+c=0 cuts X-axis at two distinct points, when

    A.b^2-4ac>0 B.b^2-4ac<0 C. b^2-4ac=0 D.none ( )

II. Fill in the blanks **10x1/2=5m**

11. The graph of the quadratic equation ax^2+bx+c=0 cuts X-axis at one points, when

    ……

12. The graph of the quadratic equation ax^2+bx+c=0 neither intersects nor touches X-axis, when…….

13. The discriminant of $2x^2$-4x+3 = 0 ……..

14. The discriminant of $3x^2-2x+\frac{1}{3}=0$ is ……

15. The sum of the roots of $ax^2+bx+c=0$ is ……..

16. The product of the roots of $ax^2+bx+c=0$ is ……

17. The roots of $x^2+7x+10=0$ is ……

18. A quadratic equation $ax^2+bx+c=0$ has two equal real roots, then x= ……..

19. The equation $x^2+4x+k=0$ has real and distinct roots , then k= ……..

20. If $9x^2+6kx+4 = 0$ has two equal roots then k= ……

III. Match the following **10x1/2=5m**

Group-A	**Group-B**	
21. The roots of the equation $\sqrt{2x^2 + 9} = 9$ are	( )	A.2
22. The value of k for which 3 is a root of the equation $kx^2 – 7x + 3 = 0$ is	( )	B.6
23. If the roots of the equation $12x^2 + mx + 5 = 0$ are real and equal then **m** is equal to	( )	C.7
24. The discriminant of $5x^2 – 3x – 2 = 0$ is	( )	D.$4\sqrt{15}$
25. If the sum of the roots of the equation $x^2 – (k + 6)x + 2(2k – 1) = 0$ is equal to half of their product, then k =	( )	E.49

Group-A	**Group-B**	
26. The roots of the quadratic equation $x^2 – 5x + 6 = 0$ are	( )	A.real,equal
27. The product of the roots of the quadratic equation $\sqrt{2}x^2 - 3x + 5\sqrt{2} = 0$ is	( )	B.imaginary
28. The nature of the roots of a quadratic equation $4x^2 – 12x + 9 = 0$ is	( )	C.5
29. The sum of the roots of the quadratic equation $x^2 - 3x + 5 = 0$ is	( )	D. (2,3)
30. The nature of the roots of a quadratic equation $x^2 + x + 9 = 0$ is	( )	E.3

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6.PROGRESSIONS

➢ 1 MARK QUESTIONS

1. Write first four terms of the AP when a=4 and d=-3 ?
2. Find d of the AP $\frac{1}{4}, \frac{-1}{4}, \frac{-3}{4}, \frac{-5}{4}$ ……..?
3. Find d of the AP $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}$, ……?
4. Find the 10^{th} term of the AP 5, 1, -3, -7,……..?
5. Which term of the AP 21, 18, 15, …… is -81 ?
6. Find the sum of first 100 natural numbers ?
7. Write the GP, if a=3, and r=2 ?
8. Write the GP, if a=256, and r= -1/2 ?
9. Find the common ratio of the GP 25,-5, 1, -1/5, ……?
10. Find x so that x,x+2, x+6 are consecutive terms of GP ?
11. Find the 20^{th} term of the GP $\frac{5}{2}, \frac{5}{4}, \frac{5}{8}$, ……?
12. Find the 10^{th} term of the GP 5,25,125……..?

➢ 2 MARKS QUESTIONS

13. Determine the AP whose 3^{rd} term is 5 and the 7^{th} term is 9. ?
14. How many two digits numbers are divisible by 3 .?
15. Which term of AP 3, 8, 13, 18, ……..78.?
16. Find the 31^{st} term of an AP whose 11^{th} term is 38 and 16^{th} term is 73. ?
17. How many multiples of 4 lies between 10 and 250.?
18. Find the 20^{th} term from the end of the AP 3,8, 13,……..., 253.?
19. Subbarao started work in 1995 at annual salary of Rs.5000 and received an increment of Rs.200 each year. In which year did his income reach Rs.7000.?
20. If the sum of the first 14 terms of an AP is 1050 and its first term is 10. Find the 20^{th} term. ?
21. How many terms of the AP 24,21,18,……..must be taken so that their sum is 78 .?
22. Find the sum of first 24 terms of the list of numbers whose n^{th} term is given by $a_n = 3+2n$.?
23. Find the 20^{th} term and n^{th} term of the GP $\frac{5}{2}, \frac{5}{4}, \frac{5}{8}$, ……?
24. Which term of the GP 2, $2\sqrt{2}$, 4, ……. Is 128. ?
25. In a GP the 3^{rd} term is 24 and 6^{th} term is 192. Find the 10^{th} term .?
26. Find the 12^{th} term of a GP whose 8^{th} term is 192 and common ratio is 2.?

➢ 4 MARKS QUESTIONS

27. A sum of Rs.1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Do these interests form an AP? If so, find the interest at the end of 30 years?
28. In a flower bed, there are 23 rose plants in the first row, 21 in the second row,19 in the third row and so on. There are 5 rose plants in the last row. How many rows are there in the flowerbed.?
29. A manufacture of TV sets produced 600sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find (i) the production in the 1^{st} year? (ii) the production in the 10^{th} year? (iii)the total production in 7 years?
30. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the AP.
31. Subba Rao started work in 1995 at an annual salary of Rs 5000 and received an increment of Rs 200 each year. In which year did his income reach Rs 7000?
32. The 4^{th} term of a GP is 2/3 and the 7^{th} term is 16/81. Find the GP.?

PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. Which of the following is not form an AP ? ( )
   A. 4,10,16,22……. B.1,-1,-3,-5,……
   C.-2,2,-2,2,……. D.x,2x,3x,4x…….
2. The common difference of the AP $\frac{1}{4}, \frac{-1}{4}, \frac{-3}{4}, \frac{-5}{4}$ ……..? ( )
   A. ¼ B. -1/4 C. 1/2 D. -1/2
3. The common difference of the AP 3,3+√2, 3+2√2, 3+3√2,……is ( )
   A.3 B. √2 C. 2√2 D. -√2
4. The common difference of the AP √2 , √8 , √18 , √32 , ……is ( )
   A. √2 B. √3 C. √8 D. √18
5. The nth term of a AP IS ( )
   A. a+d B.a+(n-1)d C. a+(n+1)d D. a-(n-1)d
6. The 10^{th} term of the AP 5, 1, -3, -7,……..is ( )
   A. 31 B. 41 C. −31 D. −41
7. The sum of first 100 natural numbers is ( )
   A. 550 B. 100 C. 5050 D. 1100
8. The sum of n terms of an AP is ( )
   A. $\frac{n}{2}$[2a+(n-1)d] B. $\frac{n}{2}$[2a+(n+1)d] C. $\frac{n}{2}$[a+(n-1)d] D. $\frac{n}{2}$[a+(n+1)d]
9. The first term of the list of the numbers whose nth term is a_n = 3+2n is ( )
   A. 3 B. 5 C. 7 D. 9
10. Which of the following is not form an GP ? ( )
    A.6,12,24,48……. B.1,4,9,16……
    C.1,-1, 1,-1,……. D.-4,-20,-100,-500…….

II. Fill in the blanks **10X1/2=5m**

11. The common ratio of the GP 25,-5, 1, -1/5, …… is……..
12. The nth term of a GP is ……
13. The 10^{th} term of the GP 5,25,125……..is…….
14. If p-1,p+3,3p-1 are in AP then p is ……
15. The no. of terms in the AP 7,10,13,……..151 …….
16. The next term of the AP √8 , √18 , √32…….. Is……..
17. …… term of the GP 2,8,32, ……is 512.
18. If a= 9 and r=1/3 then a_7 = ……
19. The value of x of the GP -2/7,x , -7/2 is …….
20. The common ratio of the GP 1,-1, 1,-1,…… is……

III. Match the following 10x1/2=5m

Group-A		Group-B
21. 4, 8, 12, 16, ……. Is	( )	A.1458
22. 1, -2, 4, -8, …. Is	( )	B.A.P
23. In G.P, 1st term is 2, common ratio is -3 then 7th term is	( )	C.-32
24. 2 + 3 + 4 + …. + 100 =	( )	D.G.P
25. In the A.P 10, 7, 4 …. -62, then 11th term from the last is	( )	E.5049

Group-A		Group-B	
26. n - 1, n - 2, n - 3, …… a_n =	( )	A.	0
27. In G.P. $a_{p+q} = m$, $a_{p-q} = n$. Then a_p =	( )	B.	$\sqrt{mn}$
28. 3 + 6 + 12 + 24 ……. Progression, the nth term is	( )	C.	3.2^{n-1}
29. In a G.P a_{n-1} =	( )	D.	ar^{n-2}
30. In A. p, the sum of nth terms is $4n - n^2$, then first term is	( )	E.	3

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7.COORDINATE GEOMETRY

➢ 1 MARK QUESTIONS

1. What is the distance between A(4,0) and B(8,0) ?
2. What is the distance between A(8,3) and B(-4,3) ?
3. Find the distance between the points origin and A(7,4) ?
4. Find the distance between A(2,0) and B(0,4) ?
5. Find the distance between A(4,2) and B(8,6) ?
6. Find the midpoint of line segment joining the points (3,0) and (1,-4) ?
7. Find the centroid of the triangle whose vertices are (3,-5),(-7,4),and (10,-2) ?
8. The points (2,3),(x,y) and (3,-2)are vertices of a triangle. If the centroid of this triangle is again(x,y), find (x,y) ?
9. The end points of line are (2,3) and (4,5). Find the slope of the line ?
10. Find the slope of the line AB with A(4,-6) and B(7,2) ?

➢ 2 MARKS QUESTIONS

11. Find the distance between A(2,3) and B(4,1) ?
12. Find the point on x-axis which is equidistant from (2,-5) and (-2,9) ?
13. If the distance between two points (x,7) and (1,15) is 10. Find x ?
14. Find the radius of the circle whose Centre is (3,2) and passes through (-5,6)?
15. Find the coordinates of the point which divides the line segment joining the points (4,-3) and (8,5) in the ratio 3:1 internally?
16. In what ratio does the point (-4,6) divide the line segment joining the points A(-6,10) and B(3,-8) ?
17. Find the ratio in which the y-axis divide the line segment joining the points (5,-6) and (1,-4). Also find the point of trisection.?
18. Find the area of triangle whose vertices are (1,-1),(-4,6) and (-3,-5).?
19. Find the area of triangle formed by the points A(5,2) , B(4,7) and C(7,-4).?
20. The points (3,-2),(-2,8) and (0,4) are three points in a plane. Show that these points are collinear ?
21. Find the value of b for the points (1,2) (-1,b) and (-3,-4) are collinear ?
22. Determine the x so that 2 is the slope of the line through P(2,5) and Q(x,3)?

➢ 4 MARKS QUESTIONS

23. Show that the points A(4,2), B(7,5), C(9,7) are lie on a same plane.?
24. Show that the points (1,7), (4,2), (-1,1) and (-4,4) are vertices of square.?
25. Find a relation between x and y such that the point (x,y) is equidistant from the points (7,1) and (3,5)?
26. Find a point on the y-axis which is equidistant from the points A(6,5) and B(-4,3)?
27. Verify the points (1,5), (2,3) and (-2,-1) are collinear or not ?
28. Show that the points A(a,o), B(-a,o), C(0,a$\sqrt{3}$) are form an equilateral triangle?
29. Show that the points (-4,-7), (-1,2), (8,5) and (5,-4) are vertices of rhombus.?
30. Find the coordinates of the points of trisection of the line segment joining the points A(2,-2) and B(-7,4)?
31. Find the coordinates of the points of trisection of the line segment joining the points A(2,6) and B(-4,8)?
32. Show that the points (7,3), (6,1), (8,2) and (9,4) are vertices of parallelogram.?
33. If the points A(6,1),B (8,2), C(9,4) and D(p,3) are the vertices of a parallelogram, find p?
34. If A(-5,7), B(-4,-5),C(-1,-6) and D(4,5) are the vertices of a quadrilateral ,then find the area of quadrilateral ABCD?
35. Find the area of a triangle whose lengths of sides are 15m, 17m, 21m, use Heron's formula and verify your answer by using the formula A= ½ bh ?
36. Find the area of a triangle formed by the points (0,0),(4,0),(4,3) by using Heron's formula ?
37. Find the area of a triangle formed by joining midpoints of the sides of the triangle whose vertices are (0,-1),(2,1),and (0,3). Find the ratio of this area to the area of the given triangle.?
38. Find the area of quadrilateral whose vertices are (-4,-2),(-3,-5),(3,-2) and (2,3)?
39. Find the area of a triangle formed by the points (2,3),(-1,3),(2,-1) by using Heron's formula ?

PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. The following point is not lie on x-axis ( )

   A.(-4,0) B.(2,0) C.(6,0) D.(0,7)

2. The distance between (-4,0) and (6,0) is ( )

   A.2 B.10 C.-10 D.-2

3. The following point is not lie on y-axis ( )

   A.(0,-3) B.(0,-8) C.(0,6) D.(4,0)

4. The distance between (0,-3) and (0,-8) is ( )

   A.11 B.5 C.-11 D.-5

5. The distance between (4,0) and (8,0) is ( )

   A.4 B.12 C.-10 D.-12

6. The distance between (8,3) and (-4,3) is ( )

   A.12 B.0 C.6 D.18

7. The distance between origin and (7,4) is ( )

   A.11 B.3 C.$\sqrt{65}$ D.$\sqrt{33}$

8. The distance between (0,3) and (0,4) is ( )

   A.3 B.5 C.4 D.7

9. The distance between (0,0) and (x,y) is ( )

   A.x+y B.x-y C.$\sqrt{x^2+y^2}$ D.x^2+y^2

10. The distance between (x_1,y_1) and (x_2,y_2) is ( )

    A.$(x_1-x_2)^2+(y_1-y_2)^2$ B.$(x_1+x_2)^2+(y_1+y_2)^2$

    C.$\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}$ D. $\sqrt{(x_1+x_2)^2+(y_1+y_2)^2}$

II. Fill in the blanks **10x1/2=5m**

11. The coordinates of the point P(x,y) which divides the line segment joining the points $A(x_1,y_1)$ and B (x_2,y_2) internally in the ratio m:n is ……

12. The midpoint of the line segment joining the points (2,7) and 2,-7) is ……

13. The centroid of the triangle whose vertices are (-4,6),(2,-2), and (2,5) is……

14. The area of a triangle whose vertices are O(0,0), A(0,4) and B(6,0) is……

15. Heron's formula for area of a triangle is ……

16. If θ is angle made by the line with x-axis then the slope of the line m=……

17. The slope of the line containing the points (x_1,y_1) and (x_2,y_2) is ……

18. The slope of the line containing the points (2,3) and (4,5) is ……..

19. In Heron's formula, s =……..

20. The centroid of a triangle divides each median in the ratio ……..

III. Match the following 10x1/2=5m

Group-A		Group-B
21. If the centroid of the triangle (a, b), (b, c) and (c, a) is O (0, 0), then the value of $a^3 + b^3 + c^3$ is	( )	A.a
22. The area of the triangle whose vertices are (0, 0), (a, 0) and (o, b) is	( )	B.$\sqrt{a^2 + b^2}$
23. The coordinates of the centroid of the triangle with vertices (0, 0) (3a, 0) and (0, 3b) are	( )	C.3abc
24. The distance between the points (a cosθ+ b sinθ, 0) and (0, a sinθ – b cosθ) is	( )	D.(a,b)
25. The distance between the points (a $\cos25^0$, 0) and (0, a $\cos65^0$) is	( )	E.$\frac{1}{2}$ ab

Group-A		Group-B
26. The distance between the points (0, 3) and (–2, 0) is	( )	A.(1,3)
27. The opposite vertices of a square are (5, 4) and (–3, 2). The length of its diagonal is	( )	B.5
28. If OPQR is a rectangle where O is the origin and p (3, 0) and R (0, 4), Then the Coordinates of Q are	( )	C.(3,4)
29. If (–2, –1), (a, 0), (4, b) and (1, 2) are the vertices of a parallelogram, then the values of a and b are	( )	D.√13
30. The distance of the mid–point of the line segment joining the points (6, 8) and (2, 4) from the point (1, 2) is	( )	E.10

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8.SIMILAR TRIANGLES

❖ 1 mark questions

1. What are similar triangles?
2. What are similar polygons?
3. State THALES theorem?
4. State the converse of the Basic proportionality theorem?
5. State **AAA** similarity criterion ?
6. State **SSS** similarity criterion ?
7. State **SAS** similarity criterion ?
8. State **Pythagoras** theorem?
9. State **Converse of Pythagoras Theorem** theorem?
10. If the sides of a triangle are 3 cm, 4 cm and 6 cm long, determine whether the triangle is a right-angled triangle.?

❖ 2 marks questions

1. In ΔABC,DE // BC and $\frac{AD}{DB} = \frac{3}{5}$, AC = 5.6 . Find AE?
2. In ΔABC,LM //AB, AL = x-3, AC = 2x, BM = x-2, BC = 2x+3 find the value of x?
3. Prove that a line drawn through the midpoint of one side of a triangle , parallel to another side bisects third side.?
4. Prove that a line joining the midpoints of any two sides of a triangle is parallel to the third side ?
5. A person 1.65m tall casts 1,8m shadow. At the same instance , a lamp-post casts a shadow of 5.4m. Find the height of the lamp-post.?
6. A man sees the top of a tower in a mirror which is at a distance of 87.6m from the tower. The mirror is on the ground facing upwards. The man is away from the mirror and his height is 1.5m. How tall is the tower.?
7. The perimeter of two similar triangles are 30cm and 20cm respectively. If one side of a triangle is 12cm, determine the corresponding side of another triangle.?
8. A girl of height 90cm is walking away from the base of a lamppost at a speed of 1.2m/sec. If the lamp post is 3.6m above the ground , find the length of her shadow after 4 seconds.?
9. A flag pole 4m tall casts a 6m shadow. At the same time, a nearby building casts shadow of 24m, How tall is the building.?
10. Prove that if the areas of two similar triangles are equal, then they are equal.?
11. ΔABC ~ ΔDEF and their areas are 64cm^2 and 121cm^2 respectively. If EF = 15.4cm,then find BC.?
12. Prove that the ratio of if the areas of two similar triangles is equal to the square of the ratio of their corresponding medians.?
13. ΔABC ~ ΔDEF.BC = 3cm, EF = 4cm, and area of ΔABC = 54cm^2 , determine the area of ΔDEF.?

14. The areas of two similar triangles are $81cm^2$ and $49cm^2$ respectively. If the altitude of the bigger triangle is 4.5cm. find the corresponding altitude of the smaller triangle.?
15. A ladder 25m long reaches a window of the building 20m above the ground. Determine the distance of the foot of the ladder from the building.?
16. A ladder 15m long reaches a window of the building 9m above the ground on one side of a street . Keeping is foot at the same point , the ladder is turned to other side of the street to reach a window 12m high. Find the width of the street. ?
17. The hypotenuse of a right triangle is 6m more than twice of it's the shortest side. If the third side is 2m less than the hypotenuse, find the sides of triangle. ?
18. ABC is an isosceles right triangle right angled at C. Prove that $AB^2 = 2AC^2$. ?
19. A wire attached to vertical pole of height 18m is 24m long and has a stake attached to the other end. How far from the base of the pole should the stake be driven so that the wire will be taut.?
20. Two poles of heights 6m and 11m stand on a plane ground. If the distance between the feet of the poles is 12m , find the distance between their tops. ?

❖ 4 marks questions

1. State and prove THALES theorem. ?
2. State and prove converse THALES theorem. ?
3. Draw a line segment of length 7.2cm, and divide it in the ratio 5:3. Measure the two parts.
4. Construct a triangle shadow similar to the given triangle ΔABC , with its sides equal to 5/3 of corresponding sides of ΔABC.?
5. Construct a triangle of sides 4cm, 5cm, 6cm. Then Construct a triangle similar to it , whose sides are 2/3 of corresponding sides of first triangle.?
6. Construct an isosceles triangle whose base is 8cm, and altitude is 4cm. Then draw another triangle whose sides are $1\frac{1}{2}$ of corresponding sides of isosceles triangle.?
7. Prove that the ratios of the areas of two similar triangles is equal to the ratios of the squares of their corresponding sides.?
8. State and prove PYTHAGORAS theorem. ?
9. State and prove converse of PYTHAGORAS theorem. ?
10. BL and CM are medians of ΔABC right angle at A. prove that $4(BL^2 + CM^2) = 5BC^2$. ?
11. ABC is a right triangle right angle at C. Let BC = a, CA = b, AB = c and p be the length of perpendicular from C on AB. Prove that (i) pc = ab (ii) $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$?
12. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals. ?
13. Prove that three times the square of any side of an equilateral triangle is equal to four times the square of the altitude?
14. O' is any point inside a rectangle ABCD. Prove that $OB^2 + OD^2 = OA^2 + OC^2$?

PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. If $\Delta ABC \sim \Delta PQR$ and $\angle P = 50°$, $\angle B = 60°$, then $\angle R$ is ( )
   (A) 100° (B) 80° (C) 70° (D) cannot be determined
2. $\Delta ABC \sim \Delta DEF$ and the perimeters of ΔABC and ΔDEF are 30 cm and 18 cm respectively. If $BC = 9$ cm, then EF is equal to ( )
   (A) 6.3 cm (B) 5.4 cm (C) 7.2 cm (D) 4.5 cm
3. $\Delta ABC \sim \Delta DEF$ such that AB = 9.1 cm and DE = 6.5 cm. If the perimeter of ΔDEF is 25 cm, then perimeter of ΔABC is ( )
   (A) 35 cm (B) 28 cm (C) 42 cm (D) 40 cm
4. If $\Delta ABC \sim \Delta EDF$ and ΔABC is not similar to ΔDEF, then which of the following is not true? ( )
   (A) $BC.\ EF = AC.\ FD$ (B) $AB.\ EF = AC.\ DE$
   (C) $BC.\ DE = AB.\ EF$ (D) $BC.\ DE = AB.\ FD$
5. If in two *triangles* ABC and PQR, $AB / QR = BC/ PR = CA/ PQ$, then ( )
   (A) $\Delta PQR \sim \Delta CAB$ (B) $\Delta PQR \sim \Delta ABC$
   (C) $\Delta CBA \sim \Delta PQR$ (D) $\Delta BCA \sim \Delta PQR$
6. If in triangles ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, when ( )
   (A) $\angle B = \angle E$ (B) $\angle A = \angle D$ (C) $\angle B = \angle D$ (D) $\angle A = \angle F$
7. The areas of two similar triangles are 169 cm^2 and 121 cm^2, if the longest side of the larger triangle is 26 cm, then the longest side of the other triangle is ( )
   (A) 12 cm (B) 14 cm (C) 19 cm (D) 22 cm
8. If $\Delta ABC \sim \Delta PQR$, area $(\Delta ABC) = 80$ cm^2 and area $(\Delta PQR) = 245$ cm^2, then $AB:PQ$ is equal to ( )
   (A) 16 : 49 (B) 4 : 7 (C) 2 : 5 (D) none of these
9. Which of the following cannot be the sides of a right triangle ? ( )
   (A) 9 cm, 15 cm, 12 cm (B) 2 cm, 1 cm, $\sqrt{5}$ cm
   (C) 400 mm, 300 mm, 500 mm (D) 9 cm, 5 cm, 7 cm
10. If a ladder of length 13 m is placed against a wall such that its foot is at a distance of 5 m from the *wall*, then the height of the top of the ladder from the ground is ( )
    (A) 10 m (B) 11 m (C) 12 m (D) none of these

II. Fill in the blanks **10x1/2=5m**

11. If diagonals of a rhombus are 12 cm and 16 cm, then the perimeter of the rhombus is ……..
12. The lengths of the diagonals of a rhombus are 24 cm and 32 cm. The perimeter of the rhombus is ……

13. In the similar *triangles*, ΔABC and ΔDEF, $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{3}{4}$. If the median AL = 6 cm, then the median DM of ΔDEF is……

14. All squares and equilateral triangles are ……..

15. Example of similar figures is ……

16. Example of non similar figures is ……

17. If a line divides two sides of a triangle in the same ratio. Then the line is parallel to the ……

18. In ΔABC, $BC^2 + AB^2 = AC^2$ Then …… is a right angle

19. If D is the midpoint of BC in ΔABC then $AB^2 + AC^2$ =……

20.……..is the longest side of right angled triangle.

III. Match the following 10x1/2=5m

Group-A		Group-B
21. The diagonal of a square is ____ times to its side	( )	A.Baudhayan theorem
22. Basic proportionality theorem	( )	B.$\sqrt{2}$
23. Pythagoras theorem	( )	C. .$\sqrt{3}a^2$ /4
24. Area of an equilateral triangle is	( )	D. .$\sqrt{3}$a /4
25. Height of an equilateral triangle is	( )	E.Thales theorem

Group-A		Group-B	
26. ΔABC ~ΔPQR, if AB = 3.6, PQ = 2.4 and PR = 5.4, then AC =	( )	A.	1:4
27. ΔABC ~ΔPQR,if AB = 6, BC = 4, AC =8 and PR = 6 then PQ+QR =	( )	B.	144
28. In ΔABC, DE//BC and DE = 1/2BC, then AD:DB =	( )	C.	7.5
29. In the rhombus ABCD, AB = 6cm, then $AC^2 + BD^2$ =	( )	D.	8.1
30. If the ratio of the medians of two similar triangles is 1:2, then the ratio of their areas is=	( )	E.	1:1

9.Tangents and Secants to a Circle

➢ 1 MARK QUESTIONS

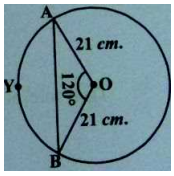
1. Define a tangent and a secant to a circle?
2. Find the length of a tangent to a circle with centre O and radius 6cm from a point such that OP = 10cm.?
3. Draw a circle and two lines parallel to given line such that one is a tangent and the other a secant to the circle.?
4. Calculate the length of a tangent from a point 15cm away from the centre of circle of radius 9cm.?
5. Find the area of minor segment of a circle.?
6. Find the area of sector whose radius is 7cm, with the given angle 60^0.?
7. The length of the minute hand of a clock is 14cm . find the area of swept by minute hand in 10minutes.?

➢ 2 MARKS QUESTIONS

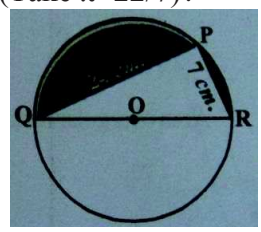
8. Prove that the tangent at any point of a circle is perpendicular to radius through the point of contact.?
9. A tangent PQ at a point P of a circle of radius 5cm meets a line through the centre O at a point Q so that OQ= 12cm. find the length of PQ.?
10. Prove that the tangents to a circle at the end points of a diameter are parallel.?
11. Prove that the lengths of tangents drawn from an external point to a circle are equal.?
12. If a circle touches all four sides of a quadrilateral ABCD at points PQRS, then prove that AB+CD= BC+DA?
13. Two concentric circles are radii 5cm, 3cm are drawn. Find the length of the chord of the larger circle which touches the smaller circle?
14. Prove that the parallelogram circumscribing a circle is a rhombus.?
15. A chord of circle of a radius 10cm subtends a right angle at the centre. Find the area of the corresponding minor segment and major segment ?
16. A chord of circle of a radius 12cm subtends an angle of 120^0 at the centre. Find the area of the corresponding minor segment of the circle. ?

➢ 4 MARKS QUESTIONS

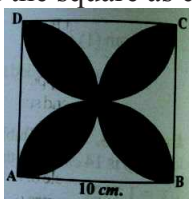
17. Draw a pair of tangents to a circle of radius 5cm which are inclined to each other at an angle 60^0.?
18. Draw a circle of radius 6cm. from a point 10cm away from its centre, construct the pair of tangents to the circle and measure their lengths. Verify by using Pythagoras theorem?
19. Construct a tangent to a circle 4cm from a point on the concentric circle of radius 6cm and measure its length. also verify the measurement by actual calculation?
20. Find the area of the segment AYB showing in the adjacent figure. If radius of the circle is 21 cm and $\angle AOB = 120^0$?



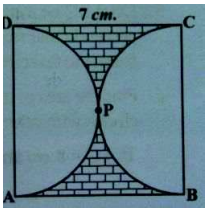
21. Find the area of the segments shaded in figure, if PQ = 24 *cm*., PR = 7 *cm*. and QR is the diameter of the circle with centre O (Take π=22/7)?



22. A car has two wipers which do not overlap. Each wiper has a blade of length 25 *cm*. sweeping through an angle of 115°. Find the total area cleaned at each sweep of the blades.
23. Find the area of the shaded region in figure, where ABCD is a square of side 10 *cm*. and semicircles are drawn with each side of the square as diameter (use π = 3.14)



24. Find the area of the shaded region in figure, if ABCD is a square of side 7 *cm*. and APD and BPC are semicircles.



PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1) A tangent to a circle intersects it in …… points. ( )

A.1 B.2 C.3 D.none

2) A line intersecting a circle in two points is called a ( )

A.secant B.tangent C.normal D.segment

3) A circle can have …….. parallel tangents at the most. ( )

A.1 B.2 C.3 D.infinite

4) The common point of a tangent ti a circle and the circle is called ( )

A.point of contact B.point of concurrence

C.centre D.circum centre

5) We can draw ……. Tangents to a given circle ( )

A.1 B.2 C.3 D.infinite

6) The tangents to a circle at the end points of a diameter are……. ( )

A. perpendicular B. parallel C.equal D.coincide

7) The lengths of tangents drawn from an external point to a circle are ( )

A. perpendicular B. parallel C.equal D.coincide

8) Area of sector is ( )

A. $\frac{x}{360}$ x$2\pi r$ B. $\frac{x}{360}$ xπr C. $\frac{x}{360}$ xπr^2 D. $\frac{x}{360}$ x$2\pi r^2$

9) Area of regular hexagon is ( )

A. $\frac{\sqrt{3}}{4}a^2$ B.3 $\frac{\sqrt{3}}{4}a^2$ C. 6 $\frac{\sqrt{3}}{4}a^2$ D. $\frac{\sqrt{3}}{2}a^2$

10) Area of segment of a circle is ( )

A.area of the corresponding sector – area of the corresponding triangle

B. area of the corresponding triangle - area of the corresponding sector

C. area of the circle – area of the corresponding triangle

D. area of the circle – area of the corresponding sector

II. Fill in the blanks **10x1/2=5m**

11) The tangent at any point of a circle is …… to the radius through the point of contact

12) The angle between a tangent to a circle and the radius drawn at the point of contact ……..

13) From a point Q , the length of the tangents to a circle is 24cm, and the distance of Q from the centre is 25cm. The radius of the circle is……..

14)If AP and AQ are two tangents to a circle with centre O so that $\angle POQ=110^0$ then $\angle PAQ$ =……

15)If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80^0 then $\angle POA$=……

16)The parallelogram circumscribing a circle is a ……..

17)The number of the tangents drawn from an external point to a circle is…….

18)The word "tangent" introduced by the mathematician ……..…….

19)The line containing the radius through the point of contact is called ……..…..

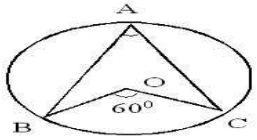
to a circle at the point

20) If two tangents AP and AQ are drawn to a circle with centre O from an external point A then $\angle PAQ$= ……

III. Match the following 10x1/2=5m

Group-A		Group-B
21. The length of the tangents from a point A to a circle of radius 3 cm is 4 cm, then the distance between A and the centre of the circle is	(	)A.8
22. A circle may have ____parallel tangents	(	)B.infinite
23. The common point to a tangent and a circle is called	(	)C.5
24. A line which intersects the given circle at two distinct points is called a ____line.	(	)D.secent
25. If two concentric circles of radii 5 cm and 3 cm are drawn, then the length of the chord of the larger circle which touches the smaller circle is	(	)E.point of contact

Group-A		Group-B
26. Sum of the central angles in a circle is	(	)A.70^0
27. If AP and AQ are the two tangents a circle with centre O so that $\angle POQ = 110°$ then $\angle PAQ$ is equal to	(	)B.50^0
28. If the angle between two radii of a circle is 130°, the angle between the tangents at the ends of the radii is	(	)C.360^0
29. If PT is tangent drawn from a point P to a circle touching it at T and O is the centre of the circle, then $\angle OPT+\angle POT$=(		)D.30^0
30. In the figure $\angle BAC$=	(	)E.90^0



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10.MENSURATION

➢ 1 AND 2 MARKS QUESTIONS

1. The radius of conical tent is 7m and its height is 10m. calculate the length of canvas used in the making the tent if width of canvas is 2m.?
2. An oil drum is in the shape of a cylinder having the following dimensions. Diameter is 2m, and height is 7m. The painter charges Rs 3 per m^2 to paint the drum. Find the total charges to be paid to the painter for 10 drums.?
3. A sphere ,a cylinder and a cone are of the same radius and same height. Find the ratio of their curved surface areas.?
4. A company wanted to manufacture 1000 hemi spherical basins from a thin steel sheet. The radius of the hemi spherical basin is 21cm . find the required area of steel sheet to manufacture the above hemi spherical basins.?
5. A right circular cylinder has base radius 14cm, and height 21cm. find (i) area of base or area of each end (ii) curved surface area (iii) total surface area and (iv) volume of the right circular cylinder.?
6. Find the volume and surface area of a sphere of radius 2.1cm.?
7. Find the volume and total surface area of a hemi sphere of radius 3.5cm.?
8. Find the volume of right circular cone with radius 6cm and height 7cm.?
9. The lateral surface area of a cylinder is equal to the curved surface area of a cone. If the radius be the same ,find the ratio of the height of the cylinder and slant height of the cone.?
10. A joker cap is in the form of right circular cone whose base radius is 7cm and height is 24cm. find the area of the sheet required to make 10 such caps.?
11. A cylinder and a cone have bases of equal radii and are equal heights . show that their volumes are in the ratio 3:1.?
12. A heap of rice is in the form of a cone of diameter 12m, and height is 8m. find its volume.? How much canvas cloth is required to cover the heap.?
13. Find the volume of the largest right circular cone that can be cut out of a cube whose edge is 7cm.?
14. A metallic sphere of radius 4.2cm. is melted and recast into the shape of a cylinder of radius 6cm. find the height of the cylinder .?

15. Metallic spheres of radius 6cm,8cm, and 10cm respectively are melted to form a single solid sphere. Find the radius of the resulting sphere.?

➢ **4 MARKS QUESTIONS**

16. A medicine capsule in the shape of a cylinder with two hemi spheres stuck to each of its ends. The length of the capsule is 14mm and the width is 5mm. find its surface area.?
17. Two cubes each of volume $64cm^3$ are joined end to end together. Find the surface area of the resulting cuboid.?
18. A solid toy is in the form of a right circular cylinder with hemi spherical shape at one end and a cone at the other end. Their common diameter is 4.2cm and the height of the cylindrical and conical portions are 12cm and 7cm respectively. Find the volume of the solid toy .?
19. A women self help group(DWACRA) is supplied to a rectangular solid of wax with diameters 66cm,42cm, 21cm to prepare cylindrical candles each 4.2cm in diameter and 2.8cm of height. Find the number of candles.?
20. How many spherical balls can be made out of a solid cube of lead whose edge is 44cm and each ball being 4cm in diameter.?
21. A hemispherical bowl of internal radius 15 *cm*. contains a liquid. The liquid is to be filled into cylindrical bottles of diameter 5 *cm*. and height 6 *cm*. How many bottles are necessary to empty the bowl ?
22. A 20m deep well with diameter 7 *m*. is dug and the earth from digging is evenly spread out to form a platform 22 *m*. by 14 *m*. Find the height of the platform.

PART-B(15M)

I. Choose the correct answer **10x1/2=5m**

1. The radius and height of cylinder and cone are equal, then the ratio of their volumes is

   A.1:1 B. 1:3 C. 3: 1 D. 1: 2 ( )

2. Curved surface area of hemi sphere is ( )

   A. $3\pi r^2$ B. $2\pi r^2$ C. $4\pi r^3$ D. $\frac{4}{3}\pi r^3$

3. Volume of hemi sphere is ( )

   A. $3\pi r^2$ B. $2\pi r^2$ C. $\frac{2}{3}\pi r^3$ D. $\frac{4}{3}\pi r^3$

4. A sphere ,a cylinder and a cone are of the same radius and same height, the ratio of their curved surface areas. ( )

   A.1:1:1 B. 1:3 :2 C. 4: 4: $\sqrt{5}$ D. 1: $\sqrt{3}$: 2

5. A sphere is inscribed in a cylinder , then the ratio of their curved surface areas is ( )

   A.1:1 B. 1:3 C. 3: 1 D. 1: 2

6. A funnel is combination of ( )

   (A) a cone and a cylinder (B) frustum of a cone and a cylinder

   (C) a hemisphere and a cylinder (D) a hemisphere and a cone

7. The shape of a bucket is usually in the form of ( )

   (A) a cone (B) frustum of a cone (C) a cylinder (D) a sphere

8. A flask used in the laboratory is the combination of ( )

   (A) a cylinder and a cone (B) a sphere and a cone

   (C) a sphere and a cylinder (D) frustum of a cone and a sphere

9. The ratio of the volumes of two spheres is 8 : 27. The ratio between their surface areas is

   (A) 2 : 3 (B) 4 : 27 (C) 8 : 9 (D) 4 : 9 ( )

10. Volumes of two spheres are in the ratio 27 : 64. The ratio of their surface areas is ( )

    (A) 2 : 3 (B) 4 : 27 (C) 8 : 9 (D) 9:16

II. Fill in the blanks **10x1/2=5m**

11. If two solid hemispheres of same base radius *r* are joined together along their bases, then curved surface area of the new solid is ……..

12. The total surface area of a hemisphere of radius 7 cm is …….

13. The ratio of the total surface area to the lateral surface area of a cylinder with base diameter 160 cm and height 20 cm is ……

14. The radius of the base of a cone is 5 cm and its height is 12 cm. Its curved surface area is……

15. Rocket is a combination of ……. and …….

16. The area of the base of a cylinder is 616 sq.units then its radius is ……..

17. T.S.A of a cube is 216cm^2 then volume is ……. cm^3

18. The base area of a cylinder is 200 cm^2 and its height is 4cm then its volume is …….. cm^3

19. Diagonal of a cuboid is …….

20. Diagonal of a cube is …….

III. Match the following **10x1/2=5m**

Group-A		**Group-B**
1. Total surface area of regular circular cylinder is	( )	A. $2\pi rh$
2. Curved surface area of regular circular cylinder is	( )	B. $2\pi r(h+r)$
3. Volume of regular circular cylinder is	( )	C. $\pi r^2 h$
4. Total surface area of regular circular cone is	( )	D. $\pi r (r+l)$
5. Curved surface area of regular circular cone is	( )	E. πrl

Group-A		**Group-B**
6. Volume of regular circular cone is	( )	A. $\sqrt{r^2+h^2}$
7. The slant height of cone l is	( )	B. $4\pi r^2$
8. Total surface area of sphere is	( )	C. $3\pi r^2$
9. The volume of sphere is	( )	D. $\frac{1}{3}\pi r^2 h$
10. Total surface area of hemi sphere is	( )	E. $\frac{4}{3}\pi r^3$

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11.TRIGONOMETRY

➢ 1 MARK QUESTIONS

1. Define all trigonometric ratios ?
2. The value of sinA and cosA is always less than 1. Why?
3. Evaluate $\sin 45^0 + \cos 45^0$?
4. Evaluate $2\tan^2 45 + \cos^2 30 - \sin^2 60$?
5. Evaluate $\frac{2\tan 30}{1+\tan^2 45}$?
6. Evaluate $\frac{sec35}{cosec35}$?
7. If sinA = sinB then prove that $A+B = 90^0$?
8. Express sin81 + tan81 in terms of trigonometric ratios of angles between 0^0 and 45^0?
9. Express sin75 + cos75 in terms of trigonometric ratios of angles between 0^0 and 45^0?
10. Evaluate tan48 tan16 tan42 tan74.?
11. Evaluate cos36cos54 – sin36 sin54 ?
12. If $\tan x = \frac{5}{12}$ then find secx?
13. If $\sin A = \frac{15}{17}$ then find cosA ?
14. If $\text{cosec}x = \frac{25}{7}$ then find cotx?
15. If secx+tanx= p then find secx-tanx ?

➢ 2 MARKS QUESTIONS

1. If tanA = ¾ then find other trigonometric ratios of ∠A?
2. If 3tanA = 4 then find sinA and cosA?
3. If cosA= 12/13 then find sinA and tan A ?
4. A chord of circle of radius 6cm is making an angle 60^0 at the centre. Find the length of the chord.?
5. If sin(A-B)= ½ and cos(A+B) = ½ find A and B.?
6. Evaluate sin60 cos30 + sin30cos60. What is the value of sin(60+30). What can you conclude.?
7. Show that $\cot\theta + \tan\theta = \sec\theta \cdot \text{cosec}\,\theta$?
8. Show that $\tan^2\theta + \tan^4\theta = \sec^4\theta - \sec^2\theta$?
9. Show that $(\text{cosec}\,\theta - \cot\theta)^2 = \frac{1-cos\theta}{1+cos\theta}$?

10. Show that $\frac{1-tan^2A}{cot^2A-1}$ = tan^2A ?

➢ **4MARKS QUESTIONS**

1. If A,B,C are interior angles of ΔABC, then show that sin $\frac{B+C}{2}$ = Cos $\frac{C}{2}$?
2. If A,B,C are interior angles of ΔABC, then show that tan $\frac{B+C}{2}$ = Cot $\frac{C}{2}$?
3. Prove that $\sqrt{\frac{1+cosA}{1-cosA}}$ = cosecA + cotA ?
4. Prove that $\sqrt{\frac{1+sinA}{1-sinA}}$ = secA + tan A ?
5. Prove that $(sinA+ cosecA)^2 + (cosA+ secA)^2 = 7+ tan^2A + cot^2A$?
6. If cosec θ + cot θ = k then prove that cos $\theta = \frac{k^2-1}{k^2+1}$?

PART-B(15m)

I. Choose the correct answer **10x1/2=5m**

1. In ΔABC,∠B=90^0, BC=5cm, AC=13cm then sinC = ( )

   A.5/13 B.12/13 C.5/12 D.13/5

2. In ΔXYZ, ∠Y=90^0 XZ=17cm, YZ=15cm then cosZ = ( )

   A.8/17 B.15/17 C.8/15 D.17/15

3. In ΔPQR with a right angle at Q,the value of ∠P is x, PQ=7cm,QR=24cm then tanx =

   A.7/25 B.24/25 C.7/24 D.25/24 ( )

4. In ΔABC with a right angle at C, BC+CA = 23cm, BC-CA= 7cm then sinA+cosA=( )

   A.23/17 B.15/17 C.8/15 D.17/15

5. The value of sinA and cosA is always ( )

   A.< 1 B.> 1 C.$= 1$ D.none

6. TanA = ( )

   A.sinA/cosA B.sinA.secA C.secA/cosecA D.all of these

7. Cot A = ( )

   A.cosA/sinA B.cosA.cosecA C.cosecA/secA D. all of these

8. If tanA= $\sqrt{3}$ then cotA = ( )

   A. $\sqrt{3}$ B.1 C.1/$\sqrt{3}$ D.∞

9. Sin45 + cos45 = ( )

   A.1/$\sqrt{2}$ B. $\sqrt{2}$ C.1/2 D.1

10. $\frac{cos45}{sec30+cosec60}$ = ( )

    A. 1/$\sqrt{2}$ B. 1/$\sqrt{6}$ C. $\sqrt{3}$/4$\sqrt{2}$ D. 1/$\sqrt{3}$

II. Fill in the blanks **10x1/2=5m**

11. $\frac{2tan30}{1+tan^2 30}$ = ……

12. $\frac{1-tan^2 45}{1+tan^2 45}$ = ……..

13. Sin (90-x) = ……

14. Sec (90-A) = ……..

15. $\frac{sec35}{cosec55}$ = ……

16. $\frac{tan36}{cot54}$ = ……

17. Cos12 – sin78 = ……..

18. Cosec31 – sec59 = …….

19. Sin15 sec75 = ……..

20. Tan26 tan64 = …….....

III. Match the following 10x1/2=5m

Group-A		Group-B	
21. Tan48tan16tan42tan74 =	( )	A.	0
22. Cos36sec36 + sin36cosec36 =	( )	B.	1
23. $Sin^2 45 - cos^2 45$ =	( )	C.	2
24. $tan^2 75 - sec^2 75$ =	( )	D.	3
25. $Cosec^2 30 - cot^2 45$ =	( )	E.	-1

Group-A		Group-B	
26. $\frac{sin^2 15+sin^2 75}{cos^2 36+cos^2 54}$ =	( )	A.	0
27. -Sin5cos85 - cos5sin85 =	( )	B.	1
28. cot74tan16-Sec16cosec74 =	( )	C.	-1
29. Sec θ + tan θ = 1/2 then Sec θ - tan θ =	( )	D.	2
30. cosec θ - cot θ = 2 then cosec θ + cot θ =	( )	E.	1/2

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12.APPLICATIONS OF TRIGONOMETRY

- **1 MARK & 2 MARKS QUESTIONS**

1. The top of a clock tower is observed at angle of α^{0} and the foot of the tower is at the distance of d meters from the observer . Draw the diagram for this data.?
2. Rinky observes a flower on the ground from the balcony of the first floor of a building at the angle of depression β^{0} . the height of the first floor of the building is x meters. Draw the diagram for this data.?
3. A large balloon has been tied with a rope and it is floating in the air. A person has observed the balloon from the top of the building at angle of elevation θ_1 and foot of the rope at an angle of depression of θ_2. The height of the building is h feet. Draw the diagram for this data.?
4. A person is flying a kite at angle of elevation α^{0} and the length of thread from his hand to kite is l .Draw the diagram for this data.?
5. A boy observed the top of an electric pole at an angle of elevation of 60^0 when the observation point is 8 meters away from the foot of the tower. Find the height of the pole.?
6. Rajender observes a person standing on the ground from a helicopter at an angle of depression 45^0 . If the helicopter flies at height of 50meters from the ground . what is the distance of the person from Rajender .?
7. A tower stands vertically on the ground. From a point which is 15meter away from the foot if the tower, the angle of elevation of the top of tower is 45^0 .what is the height of the tower.?
8. Length of the shadow of a 15m high pole is $5\sqrt{3}$ m at 7^0 clock in the morning. Then ,what is the angle of elevation of the sun rays with the ground at the time.?
9. An observer of height 1.8m is 13.2m away from a palm tree. The angle of elevation of the top of the tree from his eyes is 45^0 .what is the height of the palm tree.?

- **5 MARKS QUESTIONS**

1. Two men on either side of a temple of 30m height observe its top at the angles of elevation30^0 and 60^0 respectively. find the distance between the two men.?
2. A straight high way leads to the foot of the tower. Ramaiah standing at the top of the tower observes a car at angle of depression 30^0. The car is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the cars is found to be 60^0. Find the time taken by a car to reach the foot of the tower from this point.?

3. A TV tower stands vertically on the side of a road. From a point on the other side directly opposite to the tower, the angle of elevation of the top of the tower is 60^0. From another point 10m away from this point , on the joining this point to the foot of the tower, the angle of elevation of the top of the tower is 30^0. Find the height of the tower and width of the road.?
4. A tree breaks due storm and broken part bends so that the top of the tree touches the ground by making 30^0 angle with the ground. The distance between the foot of the tree and the top of the tree on the ground is 6m. find the height of the tree before falling down.?
5. A 1.5m tall boy is looking at the top of the temple which is 30m in height from a point at a certain distance. The angle of elevation from his eye to the top of the crown of the temple increases from 30^0 to 60^0 as he walks towards the temple. Find the distance he walked towards the temple.?
6. Two poles of equal heights are standing opposite to each other side of the road, which is 120feet wide. From a point between them on the road, the angles of elevation of the top of the poles are 60^0 and 30^0 respectively. Find the height of the poles and the distances the point from the poles.?
7. A statue stands on the top of a 2m tall pedestal. From a point on the ground, the angle of elevation of the top of the statue is 60º and from the same point, the angle of elevation of the top of the pedestal is 45º. Find the height of the statue.
8. From the top of a building, the angle of elevation of the top of a cell tower is 60º and the angle of depression to its foot is 45º. If distance of the building from the tower is 7m, then find the height of the tower.
9. A wire of length 18 m had been tied with electric pole at an angle of elevation 30º with the ground. Because it was convering a long distance, it was cut and tied at an angle of elevation 60º with the ground. How much length of the wire was cut?
10. The angle of elevation of the top of a building from the foot of the tower is 30º and the angle of elevation of the top of the tower from the foot of the building is 60º. If the tower is 30 m high, find the height of the building.

PART-B(15M)

I. Choose the correct answer 10x1/2=5m

1. The length of the shadow of a man is equal to the height of man. The angle of elevation is
   (A) 90° (B) 60° (C) 45° (D) 30° ( )
2. The length of the shadow of a pole 30*m* high at some instant is 10 √3 m. The angle of elevation of the sun is ( )
   (A) 30° (B) 60° (C) 45° (D) 90°
3. Find the angle of depression of a boat from the bridge at a horizontal distance of 25m from the bridge, if the height of the bridge is 25m. ( )
   (A) 45° (B) 60° (C) 30° (D) 15°
4. The tops of two poles of height 10m and 18m are connected with wire. If wire makes an angle of 30° with horizontal, then length of wire is ( )
   (A) 10m (B) 18m (C) 12m (D) 16m
5. From a point 20m away from the foot of the tower, the angle of elevation of the top of the tower is 30°. The height of the tower is ( )
   (A) $20\sqrt{3}$ (B) $40\sqrt{3}$ (C) $\frac{20}{\sqrt{3}}$ (D) $\frac{40}{\sqrt{3}}$
6. The ratio of the length of a tree and its shadow is 1:$\frac{1}{\sqrt{3}}$The angle of elevation of the sun is
   (A) 30° (B) 45° (C) 60° (D) 90° ( )
7. A kite is flying at a height of 50 √3 *m* above the level ground, attached to string inclined at 60° to the horizontal, the length of string is ( )
   (A) 100 m (B) 50 m (C) 150 m (D) 75 m
8. A tree is broken at a height of 10 m above the ground. The broken part touches the ground and makes an angle of 30° with the horizontal. The height of the tree is ( )
   (A) 30 m (B) 20 m (C) 10 m (D) 15 m
9. In the shadow of a tree is √3times the height of the tree, then find the angle of elevation of the sun. ( )
   (A) 30° (B) 45° (C) 60° (D) 90°
10. The angle of elevations of a building from two points on he ground 9m and 16m away from the foot of the building are complementary, the height of the building is ( )
    (A) 18 m (B) 16 m (C) 10 m (D) 12 m

II. Fill in the blanks 10x1/2=5m

11. A pole 10 m high casts a shadow 10 m long on the ground, then the sun's elevation is ……..
12. The angle of elevation of the top of a building 50 m high, from a point on the ground is 45°. The distance of the point from the foot of the building is ……..
13. A tree 6 m tall casts a 4 m long shadow. At the same time a pole casts a shadow 10 m long. The height of the pole is ……..
14. The angle formed by the line of sight with the horizontal, when the point being viewed is above the horizontal level is called …….
15. If sun's elevation is 60°, then a pole of height 6 m will cast a shadow of length …….
16. If two towers of height h_1 and h_2 subtend angles of 60 and 30 respectively at the midpoint

of the line joining their feet, then $h_1 : h_2$ is…….

17. If the angle of elevation of the sun is 30^0, then the ratio of the height of a tree with its shadow is……
18. The angle of elevation of the sun is 45^0. Then the length of the shadow of a 12m high tree is…….
19. When the object is below the horizontal level, the angle formed by the line of sight with the horizontal is called……
20. The angle of depression of a boat is 60m high bridge is 60^0. Then the horizontal distance of the boat from the bridge is……..

III. Match the following **10x1/2=5m**

Group-A		**Group-B**
21. If the angle of elevation of the top of a tower at a distance of 500 m from the foot is 30^0. Then the height of the tower is	(	) A.60^0
22. A pole 6m high casts a shadow $2\sqrt{3}$m long on the ground, then sun's elevation is	(	) B.45^0
23. The height of the tower is 100m. When the angle of elevation of sun is 30^0, then shadow of the tower is	(	) C.$100\sqrt{3}m$
24. If the height and length of the shadow of a man are the same, then the angle of elevation of the sun is	(	) D.$500/\sqrt{3}$m
25. The angle of elevation of the top of a tower, whose height is 100m, at a point whose distance from the base of the tower is $100\sqrt{3}m$ is	(	) E.30^0

Group-A		**Group-B**
26. The angle of elevation of the top of a tree height 200 m at a point at distance of 200m from the base of the tree is	(	) A.60^0
27. A lamp post $5\sqrt{3}$ m high casts a shadow 5m long on the ground. The sun's elevation at this moment is	(	) B.45^0
28. The length of shadow of 10m high tree if the angle of elevation of the sun is 30^0	(	) C.12m
29. If the angle of elevation of a bird sitting on the top of a tree as seen from the point at a distance of 20m from the base of the tree is 60^0. Then the height of the tree is	(	) D.$20\sqrt{3}$m
30. The tops of two poles of height 20m and 14m are connected by a wire. If the wire makes an angle of 30^0 with horizontal, then the length of the wire is	(	) E.$10\sqrt{3}$m

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13.PROBABILITY

❖ 1 mark&2marks questions

1. Find the probability of getting a head when a coin is tossed once. Also find the probability of getting a tail.?
2. A die is thrown twice. What is the probability that (i) 5 will not come up either time? (ii) 5 will come up at least once?
3. A die is thrown once. What is the probability of getting a number greater than 4?
4. A bag contains 4 red and 6 black balls. A ball is taken out of the bag at random. Find the probability of getting a black ball.
5. If P(E) = 0.05, what is the probability of 'not E'?
6. A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. Raju takes out a ball from the bag without looking into it. What is the probability that he takes out the (i) yellow ball? (ii) red ball? (iii) blue ball?
7. Suppose we throw a die once. (i) What is the probability of getting a number greater than 4 ? (ii) What is the probability of getting a number less than or equal to 4 ?
8. One card is drawn from a well-shuffled deck of 52 cards. Calculate the probability that the card will (i) be an ace, (ii) not be an ace.
9. A bag contains lemon flavoured candies only. Malini takes out one candy without looking into the bag. What is the probability that she takes out (i) an orange flavoured candy? (ii) a lemon flavoured candy?
10. It is given that in a group of 3 students, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday?

❖ 4marks questions

11. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is (i) red? (ii) not red?
12. A box contain 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be (i) red? (ii) white? (iii) green (iv) not green?
13. A die is thrown once. Find the probability of getting : (i) A prime number (ii) a number lying between 2 and 6 (iii) an odd number
14. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number (ii) a perfect square number (iii) a number divisible by 5.
15. A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Hanif wins if all the tosses give the same result, i.e., three heads or three tails and loses otherwise. Calculate the probability that Hanif will lose the game.
16. A bag contains 4 red, 5 black and 3 yellow balls. A ball is taken out of the bag at random. Find the probability that the ball taken out is of (i) yellow colour (ii) not of red colour.
17. It is given that in a group of 3 students, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday?
18. Gopi buys a fish from a shop for his aquarium. The shopkeeper takes out one fish at random from a tank containing 5 male fish and 8 female fish. What is the probability that the fish taken out is a male fish?
19. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are equally likely outcomes. What is the probability that it will point at (i) 8? (ii) an odd number? (iii) a number greater than 2? (iv) a number less than 9?
20. One card is drawn from a wel lshuffled deck of 52 cards. Find the probability of Getting (i) a king of red colour (ii) a face card (iii) a red face card (iv) the jack of hearts (v) a spade (vi) the queen of diamonds?

PART-B(15m)

I. Choose the correct answer 10x1/2=5m

1. Which of the following have equally likely out comes? ( )

I. A driver attempts to start a car. The car starts or does not start.

II. A player attempts to shoot a basket ball. He shoots or misses the shot.

III. A trial is made to answer a true –false question. The answer is right or wrong.

IV. A baby is born. It is a boy or a girl.

A. I,II B.II,III C.III,IV D.I,IV

2. If P(E) = 0.05 then P($\overline{E}$)) = ( )

A. 0.05 B. 0.5 C. 0.95 D.1.05

3. The probability of a getting a head when a coin is tossed once. ( )

A . 1 B. ½ C. 2 D. 0

4. If E is an event then P(E) + P ($\bar{E}$) = ... ? ( )

(A) 0 (B) 1 (C) 2 (D) –1

5. The probability of an event that is certain to happen is ( )

(A) 0 (B) 2 (C) 1 (D) –1

6. If P(E) is 0 .65 what is P (Not E)? ( )

(A)0 .35 (B) 0.25 (C) 1 (D) 0

7. Two coins are tossed simultaneously. All the possible outcomes are ( )

(A) H, T (B) HH, TT (C) HT, TT (D) HH, HT, TH, TT

8. Which of the following cannot be the probability of an event ? ( )

(A) 0 (B) 1/5 (C) 5/4 (D) 1

9. The probability of an impossible event is ( )

(A) 0 (B) 1 (C) –1 (D) $\propto$

10. A bag contains 9 Red and 7 blue marbles. A marble is taken out randomly, what is the P (red marble)? ( )

(A) $\frac{7}{16}$ (B) $\frac{9}{16}$ (C) $\frac{18}{16}$ (D) $\frac{14}{16}$

II. Fill in the blanks 10x1/1=5m

11. The definition of probability was given by …….....

12. P(E) + P($\overline{E}$)) = ……

13. The probability of an event that cannot happen is "0". Such an event is called ……. …….. event.

14. The probability of an event is certain to happen is 1. Such an event is called …… …….. event.

15. An event having only one out come in an experiment is called …… event.

16. "The book of games of chance" was written by …….

17. Two or more events of an experiment , where occurrence of an event prevents occurrences of all other events called ……..events.
18. The set of out comes of an event is called ……
19. The probability of an event is lies between……
20. The sum of the probabilities of all elementary events of an experiment is……

III. Match the following **10X1/2=5m**

Group-A	**Group – B**	
21. The probability of getting king or queen card from the play card (1 deck)	( )	A. 1/5
22. Among the numbers 1,2,3….15 the probability of choosing a number which is a multiple of 4?	( )	B.1/2
23. If a die is rolled then the probability of getting an even number is	( )	C. 1/13
24. P(E) = 0.2 then $P(\bar{E})$=	( )	D.52
25. No of playing cards in a deck of cards is	( )	E.4/5

Group-A	**Group – B**	
26. In a single throw of two dice the probability of getting distinct number is	( )	A.9/25
27. If two dice are rolled at a time then the probability that the two faces show same number is	( )	B.2/7
28. If three coins are tossed simultaneously then the probability of getting at least two heads is	( )	C.1/2
29. What is probability that a leap year has 53 Mondays	( )	D.1/6
30. A number is selected from numbers 1to 25. The probability that it is prime is	( )	E.5/6

14.STATISTICS

❖ 1 mark questions

1. Define the mean for ungrouped data.?
2. Find the mean of first "n" natural numbers.?
3. Find the mean of 5,6,9,10,6,12,3,6,11,10.?
4. Write the formula for mean for grouped data by direct method?
5. Write the formula for mean for grouped data by assumed method?
6. Write the formula for mean for grouped data by step deviation method?
7. What is mode?
8. Find the mode of 5,6,9,10,6,12,3,6,11,10,4,6,7.?
9. Can " mode " be calculated for grouped data with un equal class sizes.?
10. Write the formula for mode for grouped data ?
11. What is median ?
12. Find the median of 2, 3, 6, 0, 1, 4, 8, 2, 5 ?
13. Write the formula for median for grouped data ?
14. Find the median of the data 5,3, 1,-4,6,7,0.?
15. Will the median class and modal class of a grouped data always be different? Justify your answer.?
16. Find the mean of x, $x + 1$, $x + 2$, $x + 3$, $x + 4$, $x + 5$ and $x + 6$?
17. If mean of 4, 6, 8, 10, x, 14, 16 is 10 then the value of 'x'?

❖ 2 marks questions

1. Write the formula for mean by direct method? Explain each term in it.?
2. Write the formula for mean by assumed method? Explain each term in it.?
3. Write the formula for mean by step deviation method? Explain each term in it.?
4. Write the formula for mode for grouped data ? Explain each term in it.?
5. Write the formula for median for grouped data ? Explain each term in it.?
6. Find 'x' if the median of the observations in ascending order 24, 25, 26, $x + 2$, $x + 3$, 30, 31, 34 is 27.5.?

❖ 4 marks questions

1. Find the mean of the following frequency table?

C.I	10-25	25-40	40-55	55-70	70-85	85-100
No. students	2	3	7	6	6	6

2. Find the mean of the following frequency table?

C.I	15-25	25-35	35-45	45-55	55-65	65-75	75-85
No.students	6	11	7	4	4	2	1

3. The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs.18. find the missing frequency f.?

Daily pocket allowance	11-13	13-15	15-17	17-19	19-21	21-23	23-25
No.of children	7	6	9	13	f	5	4

4. Find the mode of the following data?

Monthly consumption	60-80	80-100	100-120	120-140	140-160	160-180	180-200
No. of consumers	8	10	16	20	14	6	5

5. Find the mode of the following data?

Age in years	5-15	15-25	25-35	35-45	45-55	55-65
No. of patients	6	11	21	23	14	5

6. Find the median of the following data?

Monthly consumption	65-85	85-105	105-125	125-145	145-165	165-185	185-205
No.of consumer	4	5	13	20	14	8	4

7. If the median of 60 observations is 28.5,find the values of x and y ?

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
frequency	5	x	20	15	y	5

8. The following distribution gives the daily income of 50 workers of a factory.

Daily income	250-300	300-350	350-400	400-450	450-500
No. of workers	12	14	8	6	10

Convert the distribution above to a less than cumulative frequency distribution, and draw its ogive ?

9. The following table gives production yield per hectare of wheat of 100 farmers of a village.

production yield	50-55	55-60	60-65	65-70	70-75	75-80
No. of farmers	2	8	12	24	38	16

Convert the distribution above to a more than cumulative frequency distribution, and draw its ogive ?

10. Draw both ogives for the following data .find the median of the data.?

C.I	15-25	25-35	35-45	45-55	55-65	65-75	75-85
No.students	6	11	7	4	4	2	1

PART-B(15m)

I. Choose the correct answer 10x1/2=5m

1. Mean of first 10 natural numbers is ( )
   (A) 5 (B) 6 (C) 5.5 (D) 6.5
2. If mean of 4, 6, 8, 10, x, 14, 16 is 10 then the value of 'x' is ( )
   (A) 11 (B) 12 (C) 13 (D) 9
3. The mean of x, $x + 1$, $x + 2$, $x + 3$, $x + 4$, $x + 5$ and $x + 6$ is ( )
   (A) x (B) $x + 3$ (C) $x + 4$ (D) 3
4. The median of 2, 3, 2, 5, 6, 9, 10, 12, 16, 18 and 20 is ( )
   (A) 9 (B) 20 (C) 10 (D) 9.5
5. The median of 2, 3, 6, 0, 1, 4, 8, 2, 5 is ( )
   (A) 1 (B) 3 (C) 4 (D) 2
6. If the mode of 2, 3, 5, 4, 2, 6, 3, 5, 5, 2 and x is 2 then the value of 'x' is ( )
   (A) 2 (B) 3 (C) 4 (D) 5
7. The modal class of the following distribution is ( )

8. Class Interval	10–15	15–20	20–25	25–30	30–35
9. Frequency	4	7	12	8	2

   (A) 30–35 (B) 20–25 (C) 25–30 (D) 15–20
8. A teacher ask the students to find the average marks obtained by the class students in Maths the student will find ( )
   (A) Mean (B) Median (C) Mode (D) Sum
9. Class mark of the class 19.5 – 29.5 is ( )
   (A) 10 (B) 49 (C) 24.5 (D) 25
10. Which of the following is not a measure of central tendency ? ( )
    (A) Mean (B) Median (C) Range (D) Mode

II. Fill in the blanks 10x1/2=5m

11. Measure of central tendency is represented by the abscissa of the point where the 'less than ogive' and 'more than ogive' intersect, is……..
12. The mean of 20 numbers is 17, if 3 is added to each number, then the new mean is……..
13. The mean of 5 numbers is 18. If one number is excluded then their mean is 16, then the excluded number is……..
14. The mean of first 5 prime numbers is ……..
15. Mode of 1, 0, 2, 2, 3, 1, 4, 5, 1, 0 is ……
16. If the mean of 8,6,4,x,3,6,0, is 4 then x =……..
17. Extremes values in the data effect ……
18. In a data ,n scores are given and if n is odd , then median is…….
19. Length of the class 11-20 is …….
20. A.M of a-2, a, a+2 is …….

III. Match the following **10x1/2=5m**

Group-A		Group -B
21. The mean for grouped data can be found by The assumed mean method	( )	A. $l + \left(\frac{f_1 - f_o}{2f_1 - f_o - f_2}\right)$ x h,
22. The mean for grouped data can be found by The step deviation method	( )	B. $l + \left(\frac{\frac{n}{2} - cf}{f}\right)$ x h
23. The mode for the grouped data	( )	C. a + $\left(\frac{\Sigma f_i u_i}{\Sigma f_i}\right)$ x h
24. The median for the grouped data	( )	D. $\frac{\Sigma f_i x_i}{\Sigma f_i}$
25. The mean for grouped data can be found by The direct method	( )	E. a + $\frac{\Sigma f_i d_i}{\Sigma f_i}$

Group-A		Group -B
26. The mean of first 5 natural numbers	( )	A.no mode
27. The mode of first 5 natural numbers	( )	B.3
28. The median of first 10 natural numbers	( )	C.5.5
29. The mean of first n natural numbers	( )	D.$\frac{n+1}{2}$
30. The mean of first n odd numbers	( )	E.n^2

****

ANSWERS

1.REAL NUMBERS

1	B	6	A	11	0	16	irrational	21	D	26	B
2	C	7	B	12	composite	17	2^m5^n	22	C	27	C
3	A	8	A	13	1	18	factor	23	E	28	A
4	B	9	D	14	$\log_{49} 7=\frac{1}{2}$	19	composite	24	A	29	E
5	D	10	C	15	$a^b=\sqrt{x}$	20	7119	25	B	30	B

2.SETS

1	B	6	C	11	{1,2,3,4,6,8}	16	φ	21	D	26	D
2	A	7	A	12	{7}	17	0	22	E	27	C
3	A	8	B	13	{1,2,3}	18	μ	23	C	28	A
4	C	9	C	14	A	19	Empty set	24	B	29	B
5	B	10	B	15	8	20	16	25	A	30	E

3.POLYNOMIALS

1	B	6	C	11	a=c	16	quadratic	21	C	26	B
2	A	7	B	12	-2,3,5	17	cubic	22	E	27	A
3	A	8	B	13	$b^2-4ac>0$	18	ax+b	23	D	28	D
4	B	9	A	14	-7	19	ax^2+bx+c	24	B	29	E
5	D	10	D	15	biquadratic	20	ax^3+bx^2+cx+d	25	A	30	C

4.LINEAR EQUATIONS

1	C	6	D	11	parallel	16	≠6	21	D	26	B
2	B	7	A	12	coincident	17	2	22	E	27	E
3	B	8	D	13	one	18	10	23	A	28	D
4	C	9	A	14	no	19	0	24	B	29	A
5	D	10	A	15	(9,5)	20	25/2	25	C	30	C

5.QUADRATIC EQUATIONS

1	A	6	C	11	$b^2-4ac=0$	16	c/a	21	B	26	D
2	A	7	A	12	$b^2-4ac<0$	17	-2,-5	22	A	27	C
3	A	8	C	13	-8	18	-b/2a	23	D	28	A
4	A	9	B	14	0	19	<4	24	E	29	E
5	C	10	A	15	-b/a	20	2/3	25	C	30	B

6.PROGRESSIONS

1	C	6	C	11	-1/5	16	$\sqrt{50}$	21	B	26	A
2	D	7	C	12	ar^{n-1}	17	5th	22	D	27	B
3	B	8	A	13	5^{10}	18	1/81	23	A	28	C
4	A	9	B	14	4	19	± 1	24	E	29	D
5	B	10	B	15	49	20	-1	25	C	30	E

7.COORDINATE GEOMETRY

1	D	6	A	11	$\left(\frac{mx_2+nx_1}{m+n}, \frac{my_2+ny_1}{m+n}\right)$	16	$\tan\theta$	21	C	26	D
2	B	7	C	12	(2,0)	17	$\frac{y_2-y_1}{x_2-x_1}$	22	E	27	E
3	D	8	B	13	(0,3)	18	1	23	D	28	C
4	A	9	C	14	12	19	(a+b+c)/2	24	B	29	A
5	A	10	C	15	$\sqrt{s(s-a)(s-b)(s-c)}$	20	2:1	25	A	30	B

8.SIMILAR TRIANGLES

1	C	6	C	11	40cm	16	triangles	21	B	26	D
2	B	7	D	12	80cm	17	Third side	22	E	27	C
3	A	8	B	13	8	18	$\angle B$	23	A	28	E
4	C	9	D	14	Similar	19	$2(AD^2+BD^2)$	24	C	29	B
5	A	10	C	15	squares	20	hypotenuse	25	D	30	A

9.TANGENTS &SECANTS

1	A	6	B	11	perpendicular	16	rectangle	21	C	26	C
2	A	7	C	12	90	17	2	22	B	27	A
3	D	8	C	13	7cm	18	Thomas fineke	23	E	28	B
4	A	9	C	14	70	19	normal	24	D	29	E
5	D	10	A	15	55	20	$\frac{1}{2}(180-\angle POQ)$	25	A	30	D

10.MENSURATION

1	C	6	A	11	$4\pi r^2$	16	14	21	B	26	D
2	A	7	B	12	462	17	216	22	A	27	A
3	C	8	C	13	5:1	18	800	23	C	28	B
4	C	9	D	14	65π	19	$\sqrt{l^2+b^2+h^2}$	24	D	29	E
5	D	10	D	15	Cylinder,cone	20	$\sqrt{3}\ l$	25	E	30	C

11.TRIGONOMETRY

1	B	6	D	11	$\sqrt{3}/2$	16	10	21	B	26	B
2	A	7	D	12	0	17	0	22	C	27	C
3	C	8	C	13	Cosx	18	0	23	A	28	A
4	A	9	B	14	Cosecx	19	1	24	E	29	D
5	A	10	C	15	1	20	1	25	D	30	E

12.APPLICATIONS OF TRIGONOMETRY

1	C	6	C	11	45	16	3:1	21	D	26	B
2	B	7	A	12	50m	17	$1:\sqrt{3}$	22	A	27	A
3	A	8	A	13	15m	18	12m	23	C	28	E
4	D	9	C	14	Angle of elevation	19	Angle of deviation	24	B	29	D
5	C	10	D	15	$6/\sqrt{3}$	20	$20\sqrt{3}$	25	E	30	C

13.PROBABILITY

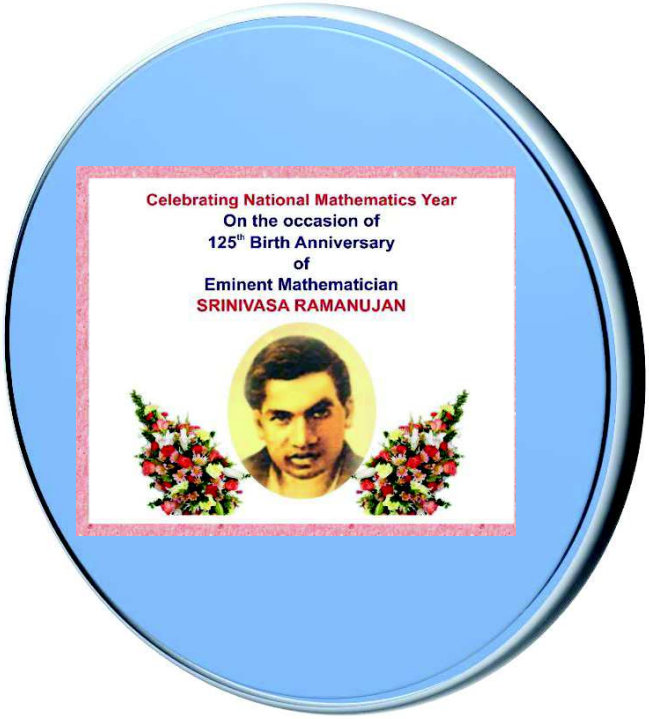
1	C	6	A	11	Simonlaplace	16	J.Cardan	21	C	26	E
2	C	7	D	12	1	17	Mutuallyexclusive	22	A	27	D
3	B	8	C	13	impossible	18	Samplespace	23	B	28	C
4	B	9	A	14	sure	19	0,1	24	E	29	B
5	C	10	B	15	sure	20	1	25	D	30	A

14.STATISTICS

1	C	6	A	11	median	16	1	21	D	26	B
2	B	7	B	12	20	17	Median	22	E	27	A
3	B	8	A	13	26	18	(n+1)/2	23	C	28	C
4	A	9	C	14	5.6	19	10	24	B	29	D
5	B	10	D	15	1	20	a	25	A	30	E

S.S.C.EXAMINATIONS , MARCH-2016

GRADE GAINER FOR X MATHS(E.M)



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