SHRI KRISHNA ACADEMY

NEET,JEE & BOARD EXAM(10th,+1,+2) COACHING CENTRE

SBM SCHOOL CAMPUS, TRICHY MAIN ROAD,NAMAKKAL

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FIRST MIDTERM EXAMINATION, JULY - 2019-2020

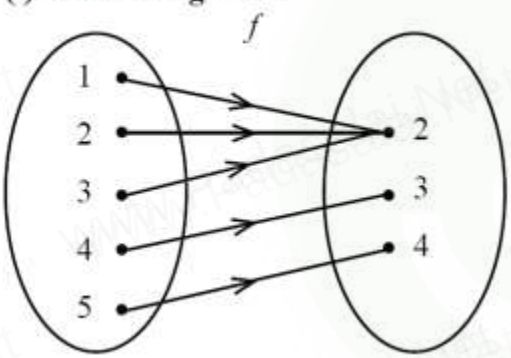
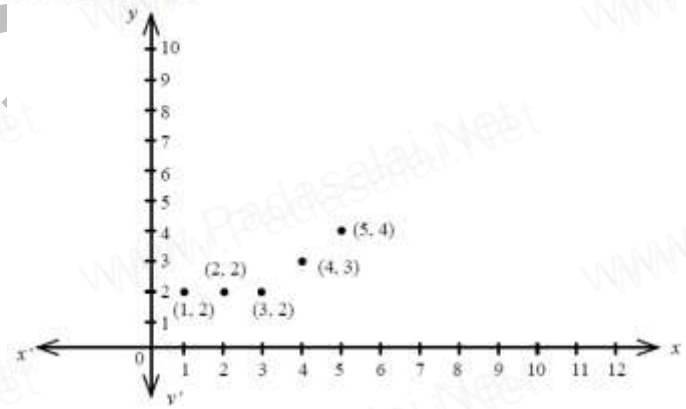
SSLC - MATHEMATICS - ANSWER KEY

MARKS: 50

SECTION – I (Marks 10)

Choose the correct answers: 10 x 1 =10		
Q. No.	**Option**	**Answer**
1	3	3
2	3	$2^{mn}-1$
3	3	$\frac{2}{9x^2}$
4	4	quadratic
5	3	into function
6	3	3
7	3	$\frac{1}{5}$
8	4	$F_5=11, F_6=18$
9	1	0
10	2	$\frac{1}{27}$

SECTION – II [MARKS : 10]

I. Answer 5 Questions. **II. Question No : 18 is compulsory** **III. Select any 4 questions from the first 7 questions.**		**5 x 2 = 10**	
11	A = { 3,4 } B = { –2,0, 3 }	1 1	2 Marks
12	Domain = { 0,1,2,3,4,5 } Range = { 3,4,5,6,7,8 }	1 1	2 Marks
13	**(i) Arrow Diagram :**  **(ii) Table Form :** x | 1 | 2 | 3 | 4 | 5 f(x) | 2 | 2 | 2 | 3 | 4 **(iii) Graph :** 	1 1	2 Marks

14	$fof(k) = 4k - 3 = 5$ $k = 2$	1 1	2 Marks
15	Let a and b $(a > b)$ be two any positive integers. Then, there exist unique integers q and r such that $a = bq + r,\ 0 \le r < b$	1 1	2 Marks
16	$t_4 = 216$ $t_5 = 648$ $t_6 = 1944$	1 1	2 Marks
17	Required Geometric Progression is $-7, -42, -252, \ldots\ldots\ldots\ldots$	2	2 Marks
18	$\sum_{k=1}^{n} k = \frac{n(n+1)}{2}$ (or) $3\frac{32(32+1)}{2}$ $3+6+9+\ldots\ldots+96 = 1584$	1 1	2 Marks
	(or)		
18	$10^4 = \left(10^2\right)^2 \equiv 5^2 \pmod{19}$ $x = 6$	1 1	2 Marks

SECTION – III [MARKS : 20]

I. Answer 4 Questions. **II. Question No : 24 is compulsory.** **III. Select any 3 questions from the first 5 questions.**	**4 x 5 = 20**

19	$B \cup C = \{2,3,5\}$ $A \times (B \cup C) = \{(0,2),(0,3)(0,5),(1,2),(1,3),(1,5)\}$ $A \times B = \{(0,2),(1,2)\}$ $A \times C = \{(0,3)(0,5),(1,3),(1,5)\}$ $(A \times B) \cup (A \times C) = \{(0,2),(0,3)(0,5),(1,2),(1,3),(1,5)\}$	1 1 1 1 1	5 Marks
20	$(fog)(x) = 4x^2$ $(fog)oh(x) = 4(x+4)^2$ $(goh)(x) = 2x+8$ $fo(goh)(x) = 4(x+4)^2$ $\therefore \quad (fog)oh = fo(goh)$ verified	1 1 1 1 1	5 Marks
21	$90 = 84 \times 1 + 6$ $84 = 6 \times 14 + 0$ $HCF(90,84) = 6$ $120 = 6 \times 20 + 0$ $HCF(84,90,120) = 6$	1 1 1 1 1	5 Marks
22	$n = \frac{l-a}{d} + 1$ (or) $= \frac{97-6}{7} + 1$ $n = 14$ $S_n = \frac{n}{2}(a+l)$ (or) $S_{14} = \frac{14}{2}(6+97)$ $S_{14} = 721$	1 1 1 2	5 Marks

23	$xS_n = x^2 + xy + x^3 + x^2y + xy^2 + x^4 + x^3y + x^2y^2 + xy^3 + ...$ $yS_n = xy + y^2 + x^2y + xy^2 + y^3 + x^3y + x^2y^2 + xy^3 + y^4 + ...$ $xS_n - yS_n = (x^2 + x^3 + x^4 + ...) - (y^2 + y^3 + y^4 + ...)$ $(x-y)S_n = \left[\frac{x^2(x^n-1)}{x-1} - \frac{y^2(y^n-1)}{y-1}\right]$	1 1 1 2	5 Marks
24	$\frac{k(k+1)}{2} = 325$ $1^3 + 2^3 + 3^3 + ... + k^3 = \left(\frac{k(k+1)}{2}\right)^2$ $= (325)^2$ $=105625$	1 1 1 2	5 Marks
	(or)		
24	$f(4) = 10$ $f(-2) = 2$ $f(1) = -1$; $f(4) + 2f(1) = 8$ $f(-3) = 1$; $\frac{f(1) - 3f(4)}{f(-3)} = -31$	1 1 1 2	5 Marks

SECTION – IV [MARKS : 10]

Each questions carries 10 marks **2 x 5 = 10**

25	Rough Diagram Line Segment PQ, Circle Median, Triangle Altitude = 3.5 cm	1 Mark 2 Marks 1 Mark 1 Mark

(OR)

25

Rough Diagram — 1 Mark

Line Segment PQ, Circle — 2 Marks

Angle bisector — 1 Mark

Triangle — 1 Mark

26

First Table (any 5 points) — 1 Mark

X	-1	0	1	2	3	4	5	6	7	8
Y	25	16	9	4	1	0	1	4	9	16

X-axis , Y-axis and Scale — 1 Mark

Draw parabola — 2 Marks

solution set is {4}

It has real and equal roots — 1 Mark

26

First Table (any 5 points) — 1 Mark

X	-3	-2	-1	0	1	2	3
Y	5	0	-3	-4	-3	0	5

X-axis , Y-axis and Scale — 1 Mark

Draw parabola — 1 Mark

Equation y=x+8

Second Table, Draw Straight Line — 1 Mark

Solution Set = {-3,4} — 1 Mark

NAMAKKAL (DT)

10th N

First Midterm Examination July - 2019-20

Time: 1.15hrs MATHS **Maximum marks:50**

Section –I **10X1=10**

i)Answer all the 10 questions
ii)Choose the correct answer from given four alternatives and write the corresponding code and the corresponding answer.

1.If n(AxB)=6 and A={1,3} then n(B) is
1) 1 2) 2 3) 3 4) 6

2.Let n(A)=m and n(B)=n then the total number of non-empty relations that can be defined from A toB is
1) m^n 2) n^m 3) $2^{mn}-1$ 4) 2^{mn}

3.If f(x) =$2x^2$ and g(x)=1/3x, then fog is
1) $3/2x^2$ 2)2/3x 3)2/9x 4)$1/6x^2$

4.f(x)=$(x+1)^3-(x-1)^3$ represents a function which is
1) linear 2) cubic 3)reciprocal 4)quadratic

5.If the range of is a proper subset of the co-domain of f ,then a function is called
1) onto function 2) many to function
3) into function 4)none of these

6.The sum of the exponents of the prime factors in the prime factorization of 1729 is
1) 1 2)2 3) 3 4) 4

7.In a G.P if t_1 =1/5 and t_2= 1/25 then the common ratio is
1)5 2)25 3)1/5 4)1/25

8.Given F_1= 1, F_2=3 and $F_n = F_{n-1}+F_{n-2}$ then F6 is
1) 3 2)5 3) 8 4) 11

9.If 6 times of 6^{th} term of an A.P is equal to 7 times the 7^{th} term , then the 13^{th} term of the A.P is
1) 0 2) 6 3) 7 4) 13

10. The next term of the sequence 3/16, 1/8 ,1/12, 1/18 ,..... is
1) 1/24 2) 1/27 3) 2/3 4) 2/3

Section –II **5X2=10**

Note i)Answer 5 questions.
ii)Question number 18 is compulsory.
iii) Select any 4 questions from first 7 questions.

11.If BxA ={(-2,,3), (-2,4), (0,3) ,(0,4), (3,3), (3,4) } find A and B

12.A Relation R is given by the set {(x,y)/y=x+3, x ε{0,1,2,3,4,5}} . Determine its domain and range.

13.Represnt the function f ={(1,2),(2,2),(3,2),(4,3),(5,4)} through i) an arrow diagram
ii) a table form iii)a graph

14.Find k if fof(k)=5 where f(k) =2k-1

15.Define Euclid's Division Lemma

16.Find the next three terms of the sequence 8,24,72,.....

17.Find the geometric progression whose first term is -7 and common ratio is 6

18. Find the sum of 3+6+9+.....+96 (or) compute x, such that $10^4 \equiv$ X (mod19)

Section – III

4X5=20

Note: i)Answer 4 questions.
ii)Question number 24 is compulsory.
iii) Select any 3 questions from first 5 questions.

19. Let A ={x ε W/ x<2}, B=={x ε N/1< x≤2}, and C={3,5). Verify that Ax(BUC) = (AxB)U(AxC)

20. Let $f(x)= x^2$, $g(x)=2x$ and $h(x)=x+4$. Show that (fog)oh = fo(goh)

21. Use Euclid's Division Algorithm , find the HCF of 84,90,120

22. Find the sum of 6+13+20+.....+97

23. If $S_n =(x+y)+(x^2+xy+y^2)+(x^3+x^2y+xy^2+y^3)+$..... n terms then prove that

$$(x-y)S_n= \left[\frac{x^2(x_n-1)}{x-1} \cdot \frac{y^2(y_n-1)}{y-1} \right]$$

24.If 1+2+3+.....k=325,then find $1^3+2^3+3^3+.....k^3$ **(or)**

If the function of f:R→R is defined by $f(x) = \begin{cases} 2x+7, & x<-2 \\ x^2-2, & -2\leq x<3 \\ 3x-2, & x\geq 3 \end{cases}$ then find the values of

i)f(4) ii)f(-2) iii) f(4)+2f(1) iv) $\frac{f(1)-3f(4)}{f(-3)}$

Section –IV

2X5=10

Note : i)Answer both the questions choosing either of the alternatives.

25. Construct a Δ PQR in which PQ=8cm ∠ R=60^0 and the median RG from R to PQ is 5.8cm. Find the length of the altitude from Rto PQ. **(or)**
Construct a Δ PQR such that PQ=6.8cm, vertical angle is 50^0 and the bisector of the vertical angle meets the base at D where PD=5.2cm.

26. Discuss the nature of solutions of the quadratic equation $x^2-8x+16$ using graph **(or)**
Draw the graph of $y=x^2-4$ and hence solve $x^2-x-12=0$.