## FIRST MID TERM EXAMINATION - 2022 10 - STD MATHS Time

Time : 1.30 Hrs Marks : 50

PART -	Δ	
Choose the correct answers		
Let $n(A) = m$ and $n(B) = n$ then the	total number of	<b>7</b> X 1 = 7
and can be defined from A to B is	cotal number of	non empty relations
a) m <sup>n</sup> b) n <sup>m</sup>	c) 2 <sup>mn</sup> -1	d), 2 <sup>mn</sup>
If $n(A \times B) = 12$ and $(A) = \{1, 2, 3\}$	then n(B) is	u) 2
a) 3 b) 4	이 가슴에 비싼 것이 같아요. 같아요. 정말 것이 아들아들고 들었다.	A DE ANTE
If {(a, 8), (6,b)} represents an identi	fy function then	d) 2
-FSeries		
a) (8, 6) b) (8, 8)	c) (6, 8)	d) {6,6}
Given $F_1 = 1$ , $F_2 = 3$ and $F_3 = F_2$ , +	E then E is	a) (0,0}
a) 3 b) 5		
The sum of the exponents of the prime		d) 11
1729 is	e factors in the p	rime factorization of
a) 1 b) 2	03	· · · ·
An AP consists of 31 terms If its 16	th taxes in the	d) 4
terms of this AP is	" term is m ther	the sum of all the
a) 16m b) 62m	c) 31m	., 31/
A system three linear equations in th		d) /2 m
planes	nee variables is	Inconsistent if their
<ul><li>a) intersect only at a point</li><li>c) coincides with each other</li></ul>	b) intersect in a line	
	d) do not intersect	
PART -	and the second	
i) Answer any five questions.		
ii) Question number 14 compulsor	<b>y.</b>	5 X 2 = 10
If B X A = $\{(-2, 3), (-2, 4), (0, 3)$	, 4), (3, 3), (3, 4	13 find A and P
Show that function $f : N \rightarrow N$ defined	by $f(x) = 2x - 1$	is one one but
onto.	,, <b>-</b> ^ 1	is one -one but not
Represent the function $f(x) = \sqrt{2}$	2	
	<b>Choose the correct answers.</b> Let $n(A) = m$ and $n(B) = n$ then the that can be defined from A to B is a) $m^n$ b) $n^m$ If $n(A \times B) = 12$ and $(A) = \{1, 2, 3\}$ a) 3 b) 4 If $\{(a, 8), (6,b)\}$ represents an idential are represents a) $(8, 6)$ b) $(8, 8)$ Given $F_1 = 1$ , $F_2 = 3$ and $F_n = F_{n-1} + 3$ a) 3 b) 5 The sum of the exponents of the prime 1729 is a) 1 b) 2 An AP consists of 31 terms. If its 16 terms of this AP is a) 16m b) 62m A system three linear equations in the planes a) intersect only at a point c) coincides with each other <b>PART -</b> <b>i)</b> Answer any five questions. <b>ii)</b> Question number 14 compulsor If B $\times A = \{(-2, 3), (-2, 4), (0, 3),$	Let $n(A) = m$ and $n(B) = n$ then the total number of that can be defined from A to B is a) $m^n$ b) $n^m$ c) $2^{mn-1}$ If $n(A \times B) = 12$ and $(A) = \{1, 2, 3\}$ then $n(B)$ is a) 3 b) 4 c) 6 If $\{(a, 8), (6,b)\}$ represents an identify function, then are represents a) $(8, 6)$ b) $(8, 8)$ c) $(6, 8)$ Given $F_1 = 1$ , $F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then $F_5$ is a) 3 b) 5 c) 8 The sum of the exponents of the prime factors in the p 1729 is a) 1 b) 2 c) 3 An AP consists of 31 terms. If its 16 <sup>th</sup> term is m then terms of this AP is a) 16m b) $62m$ c) $31m$ A system three linear equations in three variables is planes a) intersect only at a point b) intersect in c) coincides with each other d) do not inter <b>PART - B</b> <b>i) Answer any five questions.</b> <b>ii) Question number 14 compulsory.</b> If B $\times A = \{(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)$ Show that function f : N $\rightarrow$ N defined by $f(x) = 2x - 1$

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11. A man has 532 flower pots. He wants to arrange them, in rows such that each row contains 21 flower pots. Find the number of completed rows and how many flower pots are left over.

12. Find the sum a 
$$3+1+\frac{1}{3}+....\infty$$

- 13. Simplify:  $\frac{9x^2 + 81x}{x^3 + 8x^2 9x}$ .
- 14. a) If A = {2, -2, 3} and B = {1, -4} then find A X B and B X A. (OR)
  b) Find the first four terms of the sequences whose n<sup>th</sup> terms is an = n<sup>2</sup>-2.

#### PART - C

5 X 5 = 25

 $1 \times 8 = 8$ 

the set of the set of the

# III i) Answer any five questions.ii) Question number 21 compulsory.

- 15. Let  $A = \{x \in N / 1 < x < 4\}$ ,  $B = \{x \in W / 0 \le x < 2\}$  and  $C = \{x \in N / x < 3\}$  then verify  $A X (B \cup C) = (A X B) \cup (A X C)$ .
- 16. Let A = {1, 2, 3, 4} and B = {2, 5, 8, 11, 14} be two sets let f : A→B be a functions given by f(x) = 3x 1 represent the function.
  i) by arrow diagram ii) in a table form iii) as set of ordered pair iv) in a graphical form.
- 17. If f(x) = x 1, g(x) = 3x + 1 and  $h(x) = x^2$  then verify (fog) oh = fo(goh).
- 18. If nine times ninth term is equal to the fifteen times fifteenth term, show that six times twenty fourth term is zero.
- 19. Find the sum of the series  $6^2 + 7^2 + 8^2 + \dots + 21^2$ .
- 20. Find the GCD of the followings  $x^3 + x^2 x + 2$  and  $2x^3 5x^2 + 5x 3$ .
- 21. a) If the function f : R  $\rightarrow$  R is defined by f(x) =  $\begin{cases} 2x+7, & x < -2 \\ x^2-2, & -2 \le x < 3 \\ 3x-2, & x \ge 3 \end{cases}$ 
  - .i) f(4) ii) f(-2) iii) f(4) + 2f(1) iv)  $\frac{f(1)-3f(4)}{f(-3)}$

b) Find the sum to n terms of the series  $5 + 55 + 555 + \dots$ 

### PART - D

### IV Answer any one of the following.

22.

a) Draw the graph of xy = 24, x, y > 0 using the graph find

i) y when x = 3 and ii) x when y = 6 (OR)

b) Construct a triangle similar to a given triangle PQR with its sides equal to 7/4 of the corresponding sides of the triangle PQR (scale factor 7/4 > 1)

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