Ex - 9.3

1. Sets.
2. Relations and Function.
3. Complex No.
4. Series.
5. S.T. Lines.
6. Limits.
7. Statistics.

Que 22

$p^{th} = a$

$q^{th} = b$

$r^{th} = c$

Let first Term A

Common Ratio R

$a = AR^{p-1}$

$b = AR^{q-1}$

$c = AR^{r-1}$

$x' \times x'$

$x'^{+1} = x^2$

$a^{q-r} \cdot b^{r-p} \cdot c^{p-q} = 1$

$(AR^{p-1})^{q-r} \cdot (AR^{q-1})^{r-p} (AR^{r-1})^{p-q} = 1$

$A^{q-r+r-p+p-q} \cdot R^{(p-1)(q-r)+(q-1)(r-p)+(r-1)(p-q)}$

$A^0 \cdot R^{pq-pr-q+r+qr-pq-r+p+pr-qr-p+q}$

$A^0 \cdot R^0 = 1 \times 1 = 1$

THEM

$-2 \downarrow +4 \downarrow -3 \downarrow +5$

RLBS

APJ

CASE

Ques 3. First Term $a = A$

n^{th} Term $= b = AR^{n-1}$

$$P = a \cdot ar \cdot ar^2 \cdot ar^3 \cdots ar^{n-1}$$

$$P = a^n \cdot r^{1+2+3+\cdots(n-1)}$$

$$P = a^n \cdot r^{\frac{n-1}{2}[1+n-1]}$$

$$P = a^n \cdot r^{\frac{n(n-1)}{2}}$$

S.B.S.

$$P^2 = (a^2)^n \cdot r^{n(n-1)}$$

$$P^2 = [a \cdot ar^{n-1}]^n$$

$$\boxed{P^2 = (a \cdot b)^n}$$

Term - 1 $\left\{\begin{array}{l}\text{open offline}\\ \text{closed online}\end{array}\right\} \rightarrow$ O.M.R. / M.C.Q

- Set
- Re-fun
- Complu
- ST. Line.
- Limit
- State
- Series ?

1 marks,

2 marks & 4

3 marks &

4 marks.

Que24. $S_n = \frac{a(r^n-1)}{r-1}$ — (1)

$(n+1)^{th}$ $\longleftrightarrow$ n^{th} Term

$a_{n+1} = ar^{n+1-1} = ar^n$ Common Ratio $= r$

No. of Term (n)

Sum $(n+1)$ to n^{th}

$\Rightarrow \frac{ar^n(r^n-1)}{r-1}$ — (11)

Ratio $= \frac{a(r^n-1)}{ar^n(r^n-1)} = \frac{1}{r^n}$ Ans

Que26 $\quad 3 \quad G_1 \quad G_2 \quad 81$

$n = 4$ $\quad l = 81$

$a = 3$

a

$G_1 = ar = 3 \times 3 = 9$

$G_3 = ar^2 = 3 \times 3^2 = 27$

Required No. $9, 27$

$l = ar^{n-1}$

$81 = 3(r)^{4-1}$

$27 = r^3$

$3^3 = r^3$

$r = 3$

Q4e27

$$\frac{a^{n+1}+b^{n+1}}{a^n+b^n} = \sqrt{ab} = a^{\frac{1}{2}}b^{1/2}$$

$$a^{n+1}+b^{n+1} = (a^n+b^n)(a^{\frac{1}{2}}b^{\frac{1}{2}})$$

$$a^{n+1}+b^{n+1} = a^{n+\frac{1}{2}}b^{\frac{1}{2}} + b^{n+\frac{1}{2}}a^{\frac{1}{2}}$$

$$a^{n+1} - a^{n+\frac{1}{2}}b^{1/2} = b^{n+\frac{1}{2}}a^{1/2} - b^{n+1}$$

$$a^{n+\frac{1}{2}+\frac{1}{2}} - a^{n+\frac{1}{2}}b^{1/2} = b^{n+\frac{1}{2}}a^{1/2} - b^{n+\frac{1}{2}+\frac{1}{2}}$$

$$a^{n+\frac{1}{2}}(a^{1/2} - b^{1/2}) = b^{n+\frac{1}{2}}(a^{1/2} - b^{1/2})$$

$$\frac{a^{n+\frac{1}{2}}}{b^{n+\frac{1}{2}}} = 1 \Rightarrow \left(\frac{a}{b}\right)^0$$

$$\left(\frac{a}{b}\right)^{n+\frac{1}{2}} = \left(\frac{a}{b}\right)^0$$

$$n+\frac{1}{2} = 0$$

$$\boxed{n = -\frac{1}{2}}$$