

TEST NO.3

(Ch.3,4, 9 (Th#5)12,(Theorum.#-1). (Def. of Ch-3,4)

Mathematics (Science)	Tenth Class	Paper: III
Time: 15 Minutes	OBJECTIVE	Marks: 15

Note: For possible answer A, B,C and D to each question are given. The choice which you think is

correct, fill that circle in front of that question with marker or Pen ink cutting of filing two or

more circle will Result in zero mark in that questions.

- A relation between two quantities of the same kind is called:
(A) Proportion (B) Ratio (C) Variation (D) Variables
- The ratio of 1Km to 600 m is:
(A) 8 : 3 (B) 3 : 5 (C) 5 : 3 (D) 2 : 7
- Find x in proportion 4 : x :: 5 : 15:
 $\frac{75}{4}$ (A) $\frac{4}{3}$ (B) $\frac{3}{4}$ (C) 12 (D)
- If y directly proportional to x then this is written as:
 $y \propto \frac{1}{x}$ (A) $y \propto x$ (B) $y = \frac{k}{x}$ (C) None of these (D)
- If three quantities a, b and c are related as a : b :: b : c. Then b is called:
(A) Third Proportional (B) Second Proportional (C) Mean Proportional (D) Continued Proportional
- The third proportion of x + y and $x^2 - y^2$ is:
(A) $(x + y)(x - y)^2$ (B) $(x + y)^2(x - y)$ (C) $(x + y)(x - y)$ (D) $(x^2 + y^2)(x - y)$
- If four quantities a, b, c and d are related as a : b :: c : d. Then d is called:
(A) First Proportional (B) Second Proportional (C) Third Proportional (D) Fourth Proportional
- In proportion 12: P :: P : 3. The value of P is:
(A) 6 (B) -6 (C) 36 (D) Both a and b
- If a : b = c : d then theorem of componendo-dividendo is:
(A) a : c = b : d (B) b : d = d : a (C) a - b : a + b = c - d : c + d (D)
- Joint variation of $y \propto x$ and $y \propto \frac{1}{z}$ is:
 $y \propto \frac{x}{z}$ (A) $y \propto \frac{z}{x}$ (B) $y = k \frac{z}{x}$ (C) None of these (D)
- The quotient of two numbers or algebraic expression is called a:
(A) Proportional (B) Rational (C) Fraction (D) None of these
- Which fraction is improper fraction?
 $\frac{2x-3}{x^2+4}$ (A) $\frac{6x^4}{x^3+1}$ (B) $\frac{3x^2+2}{x^2+7x+12}$ (C) Both b and c (D)
- Partial fractions of $\frac{x^2+1}{(x+1)(x-1)}$ are of the form:
(A) $\frac{A}{x+1} + \frac{B}{x-1}$ (B) $1 + \frac{A}{x+1} + \frac{Bx+C}{x-1}$ (C) $1 + \frac{A}{x+1} + \frac{B}{x-1}$ (D) $\frac{Ax+B}{x+1} + \frac{C}{x-1}$
- y in ration x: y is called:
(A) Relation (B) Precedent (C) Antecedent (D) None of them
- $\frac{2x+1}{(x+1)(x-1)}$ is a/an:
(A) Improper fraction (B) Equation (C) Proper fraction (D) None of these

Mathematics (Science)	Tenth Class	Paper: III
Time : 2:10 Hrs	SUBJECTIVE	Marks: 60

(PART - I)**2. Write short answer to any SIX (6) questions:**

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- Differentiate between ratio and proportion.
- If the ratios $3x + 1 : 6 + 4x$ and $2 : 5$ are equal. Find the value of x .
- Find the ratio $3a + 4b : 5a + 7b$ if $a : b = 5 : 8$.
- If $\frac{9pq}{2lm} = \frac{18p}{5m}$, then $5q = \frac{\quad}{\quad}$.
- Find x in $\frac{x-3}{2} : \frac{5}{x-1} :: \frac{x-1}{3} : \frac{4}{x+4}$.
- What is meant by inverse variation?
- If y varies jointly as x^2 and z and $y=6$ when $x=4$, $z=9$. write y as function of x and z determine the value of y , when $x=8$ and $z=12$
- If y varies inversely as x and $y = 8$, when $x = 4$. Find y , when $x = 16$.
- Find fourth proportional of $a^3 - b^3$, $a + b$ and $a^2 + ab + b^2$

3. Write short answer to any SIX (6) questions:

12

- Resolve into partial fractions $\frac{x-11}{(x-4)(x+3)}$.
- Differentiate between improper and proper fraction.
- Define rational fraction and give examples.
- If 7 kg sugar costs Rs.560 then find cost of 15 kg sugar.
- Differentiate between continuous proportion and mean proportion.
- Find the value of the letter involved in 12, $3p - 6$, 27 continued proportions.
- Prove that $a : b = c : d$, if $\frac{ac^2 + bd^2}{ac^2 - bd^2} = \frac{c^3 + d^3}{c^3 - d^3}$.
- The surface area S of the sphere varies directly as the square of radius r , and $S = 16\pi$ when $r = 2$. Find r when $S = 36\pi$.
- Prove that $a : b = c : d$, if $pa + qb : pa - qb = pc + qd : pc - qd$.

4. Write short answer to any SIX (6) questions:

12

- Find a mean proportional between $20x^3y^3$, $5x^7y$
- Resolve $\frac{1}{3+x-2x^2}$ into partial fractions.
- State theorem of componendo-dividendo.
- $V \propto \frac{1}{r^3}$ and $V = 5$ when $r = 3$, find V when $r = 6$ and r when $V = 320$.
- Find fourth proportional of 5, 8 and 15.
- If $3(4x-5y)=2x-7y$, find the ratio $x:y$
- Find the ratio of 27 min. 30 sec, 1 hour
- Resolve $\frac{x-5}{x^2+2x-3}$ into partial fractions
- Convert into proper fraction. $\frac{x^3+x^2+1}{x^3-1}$

(PART - II)**Note: Attempt THREE questions in all. But question No.9 is compulsory.**

5. (a) P varies jointly as q and r^2 and inversely as s and t^2 , $p = 40$, when $q = 8$, $r = 5$, $s = 3$, $t = 2$. Find p in terms of q, r, s and t . also find the value of p when $q = -2$, $r = 4$, $s = 3$ and $t = -1$. 4

$$\frac{a+b+c+d}{a+b-c-d} = \frac{a-b+c-d}{a-b-c+d}$$

- (b) Prove that $a : b = c : d$, if 4

6. (a) If w varies jointly as x , y^2 and z and $w = 5$ when $x = 2$, $y = 3$, $z = 10$. Find w when $x = 4$, $y = 7$ and $z = 3$. 4

- (b) Using the theorem of componendo-dividendo. Find the value of 4

$$\frac{x+2y}{x-2y} = \frac{x+2z}{x-2z} \quad x = \frac{4yz}{y+z}$$

7. (a) The supporting load c of a pillar varies as the fourth power of its diameter d and inversely as the square of its length l . A pillar of diameter 6 inches and height 30 feet will support a load of 63 tons. How high a 4 inch pillar must be to support a load of 28 tons? 4

$$\frac{x^2+2x+1}{(x-2)(x+3)}$$

- (b) Resolve into partial fractions 4

$$\frac{3x+7}{(x^2+1)(x+3)}$$

8. (a) Resolve into partial fractions 4

(b) solve $\frac{(x-2)2-(x-4)2}{(x-2)2+(x-4)2} = \frac{12}{13}$ 4

9. Prove that Two chords of a circle which are equidistant from the centre, are congruent. 8

OR

Prove that the measure of a central angle of a minor arc of a circle, is double that of the angle subtended by the corresponding major arc.