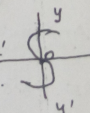




I Choose the correct answer:

1. If there are 1024 relations from a set $A = \{1, 2, 3, 4, 5\}$ to a set B , then the number of elements in B is $8 \times 1 = 8$
a, 3 b, 2 c, 4 d, 8
2. If $g = \{(1, 1), (2, 3), (3, 5), (4, 7)\}$ is a function given by $g(x) = \alpha x + \beta$ then the values of α and β are
a, $(-1, 2)$ b, $(2, -1)$ c, $(-1, -2)$ d, $(1, 2)$
3. The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \dots$ is
a, $\frac{1}{24}$ b, $\frac{1}{27}$ c, $\frac{2}{3}$ d, $\frac{1}{81}$
4. If 3, x, 6.75 are in G.P. then x is
a, 3.7 b, 4.5 c, 4.6 d, 3.8
5. $y^2 + \frac{1}{y^2}$ is not equal to
a, $\frac{y^4 + 1}{y^2}$ b, $(y + \frac{1}{y})^2$ c, $(y - \frac{1}{y})^2 + 2$ d, $(y + \frac{1}{y})^2 - 2$
6. Simplify: $\frac{a-b}{b-a} \times \frac{b-c}{c-b} \times \frac{c-a}{a-c}$ is
a, 0 b, 1 c, -1 d, $\frac{a-b}{a-c}$
7. The perimeters of two similar triangles ΔABC and ΔPQR are 36 cm and 24 cm respectively. If $PQ = 10$ cm, then the length of AB is
a, $6\frac{2}{3}$ cm b, $\frac{10\sqrt{6}}{3}$ cm c, $6\frac{2}{3}$ cm d, 15 cm
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 d, 11

II Answer 7 questions (Question number 17 is compulsory): $7 \times 2 = 14$

9. Let f be a function from R to R defined by $f(x) = 3x - 5$. Find the values of a and b given that $(a, 4)$ and $(1, b)$ belong to f .
10. Determine whether the graph given below represent a function. Give reason for your answer in graph.
- 
11. Let $A = \{1, 2, 3\}$ and $B = \{x \mid x \text{ is a prime number less than } 10\}$. Find $A \times B$ and $B \times A$.
12. 'a' and 'b' are two positive integers such that $a^b \times b^a = 800$. Find 'a' and 'b'.
13. Find the remainder when 81 is divided by 17 .
14. Find the sum of $1 + 3 + 5 + \dots + 55$.

15. Find the L.C.M of each pair of the polynomials $a^2+4a-12$, a^2-5a+6 whose G.C.D is $a-2$.

16. Find the Square root of $16x^4+8x^2+1$.

17 (a). If ΔABC is similar to ΔDEF such that $BC=3\text{cm}$, $EF=4\text{cm}$ and area of $\Delta ABC=54\text{cm}^2$. Find the Area of ΔDEF .

[OR]

17 (b) Find the number of term in the G.P $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots, \frac{1}{8187}$.

Answer 4 Questions (Q.no ~~24~~ is compulsory): $4 \times 5 = 20$.

18. If $f: R \rightarrow R$ and $g: R \rightarrow R$ are defined by $f(x) = x^5$ and $g(x) = x^4$ then check if f, g are one-one and $f \circ g$ is 1-1?

19. Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.

20. Find the sum of $10^3+11^3+12^3+\dots+20^3$.

21. Find the G.C.D of $6x^3-30x^2+60x-48$ and $3x^3-12x^2+21x-18$.

22. Find the square root of $64x^4-16x^3+17x^2-2x+1$.

23. Two triangles QPR and QSR , right angled at P and S respectively are drawn on the same base QR and on the same side of QR . If PR and SR intersect at T . Prove that $PT \times TR = ST \times TQ$.

24 (a) If $x = \frac{a^2+3a-4}{3a^2-3}$ and $y = \frac{a^2+2a-8}{2a^2-2a-4}$ find the value of x^2y^2 .

[OR]

24 (b). Use Euclid's Division Lemma to find HCF of 396, 504, 636.

Answer the question choosing either of the alternatives:

25. Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{1}{3}$ of the corresponding sides of the triangle PQR (Scale factor $\frac{1}{3}$).

26. Discuss the nature of solutions of $x^2-18x+80$ (Using Graph).

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Preparation By

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