Tsi10M

Tenkasi District
Common First Mid Term Test - 2024

31-07-2024   **Standard 10**
Time: 1.30 Hrs.   **MATHS**   Marks: 50

Part - A

Choose the best answer: 7×1=7

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
   a) 3   b) 2   c) 4   d) 8

2) If {(a, 8), (6, b)} represents an identity function, then the value of a and b are respectively.
   a) (8, 6)   b) (8, 8)   c) (6, 8)   d) (6, 6)

3) If $f(x) = 2x^2$ and $g(x) = \dfrac{1}{3x}$, then fog is
   a) $\dfrac{3}{2x^2}$ b) $\dfrac{2}{3x^2}$ c) $\dfrac{2}{9x^2}$ d) $\dfrac{1}{6x^2}$

4) Using Euclid's division lemma, if the cube of any positive integer is divided by 9 then the possible remainders are
   a) 0, 1, 8   b) 1, 4, 8   c) 0, 1, 3   d) 1, 3, 5

5) If 6 times of 6th term of an A.P is equal to 7 times of 7th term, then the 13th term of the A.P is
   a) 0   b) 6   c) 7   d) 13

6) The value of $(1^3+2^3+3^3+\ldots\ldots+15^3) - (1+2+3+\ldots\ldots+15) =$
   a) 14400   b) 14200   c) 14280   d) 14520

7) If xy−7 = 3 is a
   a) linear equation   b) equation of circle
   c) cubic equation   d) not a linear equation

Part - B

Answer the following questions: [Any 5]   5×2=10
[Q.No. 14 is compulsory]

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

9) Find fog, If f(x) = x−6, g(x) = x^2.

10) If f(x) = 2x−x^2, find (i) f(1) (ii) f(2).

11) If d is the highest common factor of 32 and 60. Find x and y satisfying d = 32x+60y.

12) Which term of an A.P 16, 11, 6, 1,.........is −54?

13) Find the sum to infinity of 9+3+1+.......

14) Solve: x+y = 5; x−y = 1

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Part - C

Answer the following questions: [Any 5]   **5×5=25**

[Qn.No. 21 is compulsory]

15) Let A = {x∈ W / x<2}, B = {x∈N / 1<x≤4} and C = {3, 5}
    Verify (i) A×(B∪C) = (A×B) ∪ (A×C).

16) If f(x) = 2x+3, g(x) = 1−2x and h(x) = 3x prove that fo(goh) = (fog)oh.

17) The sum of three consecutive terms that are in A.P is 27 and their product is 288. Find the three terms.

18) The perimeters of two similar triangles ABC and PQR are respectively 36 cm and 24 cm. If PQ = 10 cm, find AB.

19) Find the sum to n terms of the series 5+55+555+..........

20) Solve the following system of Linear equations 3x−2y+z = 2, 2x+3y−z = 5, x+y+z = 6.

21) Find the sum of the series $6^2+7^2+8^2+.........+21^2$.

Part - D

Answer the following question: **1×8=8**

22) a) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle PQR. (Scale factor $\frac{3}{5}$<1)

(OR)

b) Construct a triangle similar to a given triangle ABC with its sides equal to $\frac{7}{3}$ of the corresponding sides of the triangle ABC. (Scale factor $\frac{7}{3}$>1)

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