***11th Applied Maths – Holidays Homework**
Topics: Numbers, Logarithms, Sets, Statistics

A)Create question of case - study on above said topics. Each case-study question must carry (1+1+2=4 marks) . Also Solve the questions .
B) Solve the assignment given below based on these topics.

📘 UNIT 1: NUMBERS `2 marks each`

1. Define prime and composite numbers with 2 examples each.
2. Find prime factorization of 1260.
3. Convert 110101_2 to decimal.
4. Convert 89_{10} to binary.

5. Find HCF of 4052 and 12576 using Euclid's division algorithm.
6. Find LCM of 96, 120, 150.
7 Check if 331 is prime using divisibility rules.
8. Write the binary addition: $1011_2 + 1101_2$

📘 UNIT 2: LOGARITHMS `2 marks each`

1. Evaluate: $\log_{10} 10000$
2. Evaluate: $\log_2 1/32$
3 If log 5 = 0.6990, find log 125.
4. If log 2 = 0.3010, find number of digits in 2^{25}.
5. Solve: $\log_4 x = 3/2$
6. Solve: log(x - 2) + log(x + 2) = log 5
7 If log 2 = a, log 3 = b, express `log 72` in terms of `a` and `b`.
8. Find `x` if `3^(2x+1) = 27`
9 Simplify: `log √27 + log 8 - log √1000`

📘 UNIT 3: SETS `2 marks each`

1. If U = {1,2,3...10}, A = {2,4,6,8}, find A'.
2. If A = {a,b,c,d}, B = {c,d,e,f}, find A ∪ B, A ∩ B, A - B.
3. State commutative and associative laws for union of sets.
4. Draw Venn diagrams for A ∩ B and (A ∪ B)'.
5. If n(A) = 20, n(B) = 30, n(A ∩ B) = 10, find n(A ∪ B).
6. In a group of 60 people, 25 like tea, 26 like coffee, 9 like both. Find people who like neither.
7. If `A ⊂ B`, what is `A ∩ B` and `A ∪ B`?
8. Write power set of `{x, y}`.
9. If `n(P(A)) = 256`, find `n(A)`.
10. State and verify De Morgan's Law using A = {1,3,5}, B = {1,2,3}, U = {1,2,3,4,5}.

📘 UNIT 4: STATISTICS `2 marks each`

1. Find mean of first 10 natural numbers.
2. Find median of: 7, 9, 12, 15, 17, 19, 21, 24
3. Find mode of: 5, 3, 9, 3, 7, 12, 3, 11, 15
4. The mean of 20 observations is 18. If one observation 20 is removed, find new mean.
5. Find range of: 45, 32, 67, 54, 89, 23, 78
6. Calculate S.D for: 2, 4, 6, 8, 10
7. The coefficient of variation of two series is 58% and 69%. Their S.D are 21.2 and 15.6. Find their means.
8. Which measure of central tendency is affected most by extreme values? Why?
9. Draw a frequency polygon for: Class 0-10: 5, 10-20: 8, 20-30: 12, 30-40: 6
10. Differentiate between variance and standard deviation.