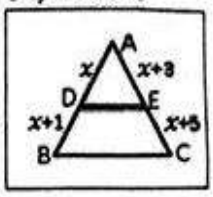
SUMMATIVE ASSESSMENT – I, 2017 MATHEMATICS Class – X

Time Allowed: 3 hours **Maximum Marks: 80**

SECTION –A [6x1=6]

1. Show that any number of the form 6^n, where $n \epsilon N$ can never end with digit 0.
2. The HCF of two number is 27 and their LCM is 162, if one of the number is 54, find the other number.
3. In a Δ ABC, DE||BC, then find the value of x.



4. If $\tan 2A = \cot(A + 60°)$. Find the value of A, where 2A is an acute angle.
5. Find c.d of an A.P $\sqrt{3}\sqrt{6}\sqrt{9}\sqrt{12}$ ... ...
6. If $\sin\alpha = \frac{1}{2}$ then find the value of $3\sin\alpha - 4\sin^3\alpha$.

SECTION-B [6x2=12]

7. How many terms of A.P 27, 24, 21 ..... should be taken so that their sum is zero (0)?
8. Deepti can row downstream 20 km in 2 hours and upstream 4 km in 2 hours. Find her speed of rowing in still water and the speed of the current.
9. Find cosec 30° & cos 60° geometrically.
10. $\sin(A + B) = 1$ & $\sin(A - B) = \frac{1}{2}, 0 \leq A + B = 90°$ & $A > B$. then find A & B.
11. How many two digit numbers are divisible by 3?
12. Find the value of K for which quadratic equations $kx.(x - 2) + 6 = 0$ have two equal roots.

SECTION-C [10X3=30]

13. Is it possible to design a rectangular park of perimeter 80m and area $400m^2$? If so find its length and breath
14. Solve for x, $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}, x \neq -4, 7.$
15. Which term of A.P 3,15,27,39, ...will be132 more than its 54^{th} term.
16. Prove that: $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{\sec\theta - \tan\theta}$
17. If α and β are the zeroes of $p(x) = 6x^2 - 7x + 2$. Find the quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ & $\frac{1}{\beta}$
18. Solve for x, $x^2 - (2b - 1)x + (b^2 - b - 20) = 0$
19. The sum of n term of an A.P is $3n^2 + 5n$. Find the A.P and its 15^{th} term.

20. State and prove Pythagoras theorem.

21. Find the mean of the data by step deviation method.

C.f	15-25	25-35	35-45	45-55	55-65	65-75	75-85	85-95
Frequency	6	11	7	4	4	2	1	10

22. If A,B,C are interior angles of a Δ ABC, Then

Show that: $\sin\left(\frac{B+C}{2}\right) = Cos\frac{A}{2}$.

SECTION-D

[8X4=32]

23. Find Trigonometric ratio of ∠30° & ∠45° in all values of T.R.

24. Define irrational number and prove that $3 + \sqrt[3]{5}$ is an irrational number.

25. Find the graphically solution of $x - 2y = 0$ *and* $3x + 4y = 20$.

26. The ratio of income of two persons is 9:7 and the ratio of their expenditure is 4:3 if each of them manage to save Rs.2000/month. Find their monthly incomes.

27. The sum of the digits of two digits number is 9. Also 9 times the number is twice the number obtain by reversing the order of digits. Find the numbers.

28. Solve for x & y.

$$\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4} \quad and \quad \frac{1}{2(3x+y)} - \frac{1}{(3x-y)} = \frac{-1}{8}$$

29. Show that $a_1, a_2, a_3, \ldots\ldots\ldots a_n$, form A.P. where an is defined as $a_{n=9-5n}$.

30. The ratio of areas of two similar Δ^s is equal to the ratio of squares of their corresponding sides and hence find.

In this given Δ ABC, PQ II AC and it divides the Δ into two equal parts in area. Then find the ratio of $\frac{AP}{AB}$.