Periodic Test (24 July 2017)

Class – X

Paper- Mathematics (Set-A)

Time: 2hr. **M.M. 50**

Section-A

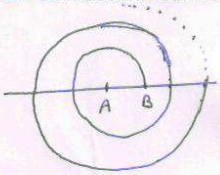
1. Use Euclids division algorithm to find HCF of 847, 2160 (2)
2. If α *and* β are the zeroes of the quadratic polynomial $f(x) = x^2 - px + q$ then find $\alpha^2 + \beta^2$ (2)
3. Show that sequence defined by $a_n = 9 - 5n$ is an AP, find its common difference. (2)
4. Find the number of terms in an AP 7, 13, 19 ..... 205 and also find S_n. (2)
5. If $Sin\ A = \frac{3}{4}$, calculate cos A and tan A. (2)
6. Evaluate: $\tan 48^0\ \tan 23^0\ \tan 42^0 \tan 67^0$ (2)

Section - B

7. Prove that $\sqrt{2}$ is an irrational number. Hence show that $3 + 5\sqrt{2}$ is an irrational number (3)
8. Find the zeroes of the polynomial $f(x) = 4\sqrt{3}x^2 + 5x - 2\sqrt{3}$ and verify the relationship between the zeroes and its co-efficients. (3)
9. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the AP. (3)
10. How many three digit numbers are divisible by 7. (3)
11. Express the trigonometric ratios $Sin\,A, \sec A and\ \tan A$ in terms of cot A. (3)
12. Evaluate: $\frac{5\cos^2 60 + 4\sec^2 30 - \tan^2 45 + \tan^2 30^0}{\cos ec^2 30^0 + \sin^2 30 + \cos^2 30}$ (3)

Section - C

13. Show that square of any positive integer is of the form 4q or 4q+1 for some integer q. (5)
14. Find the values of a and b so that $x^4 + x^3 + 8x^2 + ax + b$ is divisible by $x^2 + 1$. (5)
15. A spiral is made up of successive semi-circles, with centres alternatively at A and B, starting with centres at A, of radii 0.5cm, 1.5cm, 2.0cm as shown in the figure. What is the total length of such a spiral made up of thirteen consecutive semi-circles? (5)



16. Prove $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \cos ec\, A + \cot A$ (5)

Periodic Test (July 2017)

Class – X

Paper- Mathematics (Set-B)

Time: 2hr. **M.M. 50**

Section-A

1. Use Euclid's division algorithm to find HCF of 4052 and 12576 (2)
2. If α *and* β are the zeroes of the quadratic polynomial $f(x) = ax^2 + bx + c$ then find $\alpha^2 + \beta^2$ (2)
3. Show that sequence defined by $a_n = 5n - 7$ is an AP, find its common difference. (2)
4. Find the number of terms in an AP $18, 15\frac{1}{2}, 13, \ldots\ldots\ldots -47$ and also find S_n. (2)
5. Given $15\cot A = 8$, find Sin A and Sec A. (2)
6. Evaluate $\cos 38^0 \cos 52^0 - \sin 38^0 \sin 52^0$ (2)

Section - B

7. Prove that $\sqrt{3}$ is an irrational number. Hence show that $2 - 5\sqrt{3}$ is an irrational number (3)
8. Find the zeroes of the polynomial $f(x) = \sqrt{3}x^2 + 10x + 7\sqrt{3}$ and verify the relationship between the zeroes and its co-efficients. (3)
9. The sum of the 5th and 9th terms of an AP is 72 and the sum of the 7th and 12th terms is 97. Find the AP. (3)
10. How many multiplies of 4 lies between 10 and 250. (3)
11. Express the trigonometric ratios $Sin\,A, \cos A and \tan A$ in terms of sec A. (3)
12. Evaluate: $\dfrac{\tan^2 60 + 4\cos^2 45^0 + 3\sec^2 30^0 + 5\cos^2 90^0}{\cos ec\, 30^0 + \sec 60 - \cot^2 30}$ (3)

Section - C

13. Use Euclid's division lemma to show that the square of any positive integer is either of the form 3m or 3m+1 for some integer m. (5)
14. If two zeroes of the polynomial $f(x) = x^4 - 6x^3 - 26x^2 + 138x - 35$ *are* $2 \pm \sqrt{3}$, find other zeroes. (5)
15. The sum of third and seventh terms of an AP is 6 and their product is 8. Find the sum of first sixteen terms of an AP. (5)
16. Prove $\dfrac{\tan\theta}{1 - \cot\theta} + \dfrac{\cot\theta}{1 - \tan\theta} = 1 + \sec\theta \cos ec\,\theta$ (5)