Shivgadhi English School

1st Terminal Examination 2081

Class: 10 F.M.: 75

Time : 3hrs Subject: O.Math

Attempt all the questions

Group 'A' $[5 \times 2 = 10]$

1. a) What is the y-intercept of y=sinx ?

b) Which range of the functions between f and g is equal to the range of the functions gof (x) ?

2.a)Define composite function with an example .

b) If a polynomial q(x) is divided by (x-b), what will be its remainder?

3.a) If f(x) =q(x) ×d(x) + $r(x)$, write the meaning of each term.

b) Define factor theorem.

4.a) State the meaning of each term in the formula :t_n =a+(n-1)d.

b) Write the sum of n terms of arithmetic sequence whose first term 'P' and the last term 'q' .

5.a) What is the geometric mean between two positive numbers m and n ? Write it .

b) Write the meaning of each term in the formula $s_n = \frac{a(r^n-1)}{r-1}$

Group B (4x4= 16)

6. a) If f={(3,4) , (4,5) , (5,6) } and g= { (2,3) ,(3,4) , (4,5) } express fog in an ordered pair form.

b) If f(x) =3x+7, Find the value of ff(2) .

7. a) If f:x →3x+p and ff(2)=12, find the value of P.

b) If $2x^3 6x^2$+3= (-2)xQ(x)+R, Find Q(x) and R using synthetic division method.

8.a) If (x-7) is a factor of polynomial f(x)= $x^3 - 9x^2 + (k+1)x - 7$, find the value of k.

b) How many terms are there in the series 5+9+13+……+77? find .

9.a) If 5,p,q,11 is an arithmetic sequence .Find the values of x and y .

b) If a+2, a+8 and 17+a are in geometric sequence, find the value of a.

Group C 11x3=33

10 . If f(x) =3x+4 and g(x) =2x+2 then prove that (fog) (x) =(gof) (x)

11. If f(x) =3x-2 and fog(x) =6x-2 then find value of x such that gof(x) =8.

12. If f(x) =2x-5 , g(x) =3x+1 are two functions, find g$f^{-1}{}^{(5)}$

13. If f(x) =2x-5 , g(x) =$\frac{3x+5}{2}$ and ff(x) =g^{-1} (x) , then find the value of x .

14. Solve : $x^3 - 4x^2 - 7x + 10$ = 0

15. Find the value of n where y=$x^3 - 4x^2 + x + 8$ and y=2

16. The third term and the 13th term of an arithmetic sequence are -40 and 0 respectively , what is the 28th term of the sequence?

17. If the fourth term of an AP is 1 and the sum of its first eight termis 18, find the tenth term of the series.

18. A person pays a loan of Rs.975 in monthly installments , each installment being less than the former by Rs 5 . The amount of first installment is Rs .100 . In how many installment will the entire amount be paid ?

19. Some geometric means are inserted between 2 and 32. Find the number of means between the numbers if second mean is 8.

20. If the third and seventh terms of a geometric series are 8 and 128 respectively , Find the sum of its first 1 terms.

Group D 4x4=16

21. If f(x) =3x +a and fof(6) =10 find the values of a and $f^{-1}(4)$.

22. If $2x^3 - 5x + a$ and $x^3 - x^2 + ax + 5$ leave equal remainder when divided by (x+2) , find the value of a.

23. There are n arithmetic means between 4 and 24. if the ratio of third mean to the last mean is 4:5 then find the number of terms in the series.

24. The sum of three terms in an arithmetic series is 24. If 1,6 and 18 are added to them respectively , the result are in geometrical series , Find the terms.

The End