**Question Bank EMS (17216) for 2&4 marks**

**CH.1 Function**

1. If f(x) = x4-2x+7 find f(0)+f(2)

2. If f(x)=, t=,, show that f(t)= x

3. If f(x) =tanx show that 1) f (2x) =, 2) f (α+β) =

4. If f(t)=50sin(100πt+0.4) prove that f(+t)= f(t)

5 .If f(x)=log() then show that f(a+1)+f(a)=log ()

6. If f(x)= sinx show that f(3x)=3f(x)-4f3(x).

**CH.2 Limits**

7. 8. .

9. 10..

11. . 12.

 **CH.3 Derivatives**

13.Using First Principle of derivatives find derivatives of (a) ex b) sinx c)

14.If y=log(tan(4-3x))find .

15.If U& V are differentiable functions of x, y= then prove that U+V.

16.find derivative of

17.Differentiate ) w.r.t. ).

18.Differentiate . ). W.r.t x

**CH.4 Complex Number**

19.Using Euler’s formula prove that 1)sin2θ+cos2θ=1 (2)sin2x= 2sinxcosx

20.Express in the form a+ib (i) (ii) a,bЄ R, i=

21.Express in the polar form (i) 2(1+i) (ii) 1-cosα+isinα

22. If x+iy = sin (A+iB) prove that (i) + ii) - =1

23. Simplify

24. Find cube root of unity.

25. Prove that (1+cosθ+isinθ)n+(1+cosθ-isinθ)n =2n+1cosn()cos()

**CH.5 Solution Of Algebraic Equations**

26. Using Bisection method find approximate root of x3-x-4=0

27.Solve equation x3-9x+1 =0using Regula Falsi method(up to 3 iterations)

28.Using Newton Raphson method find approximate value of perform 3 iterations

29.Find approximate root of equation xlogx =1.2 that lies between 2&3 using false position method.

30.Find root of equation e-x- x=0 by using bisection method (up to 3 iterations)

31.By using Newton Raphson method find root of equation x4-x-9=0(up to 2 iterations)

 **CH.6 Numerical solution of simultaneous Equations**

32.Solve the equation using Jacobi’s method (perform 3 iterations)

(1)10x+y+2z=13, 3x+10y+z=14,2x+3y+10z=15

(2)5x+2y+z=12, x+4y+2z=15,x+2y+5z=20

33. Solve the following equation using Gauss seidal method 15x+2y+z=18,2x+20y-3z=19,

3x-6y+25z=20 perform 3 iterations

34. Solve by Gauss elimination method (1) x+y+z=6, 3x-y+3z=10, 5x+5y-4z=3

(2 )x+2y+3z= 14, 3x+y+2z=11,2x+3y+z=11

35. Solve by Gauss seidal method 10x+y+z=12,x+10y+z=12,x+y+10z=12 perform 3 iterations.